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CHILD DEVELOPMENT

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CHILD DEVELOPMENT: A GENERATION OF RESEARCH[1]

DOROTHY MCLEAN[2]

The primary aim of the National Academy of Sciences—National Research Council is to bring together those scientists of the country most competent to deal both with specific scientific problems and to survey the larger possibilities of science. The effectiveness of the organization depends on the willing participation of these scientists who give generously of their time and effort without financial compensation.

Child Development is one of the many areas which has been explored in this way, and the Society for Research in Child Development (hereinafter designated SRCD) emerged from the National Research Council, the active agent of the National Academy of Sciences, through its Division of Anthropology and Psychology.[3]

This division was organized October 20, 1919. One month after its organizational meeting the division chairman, Walter V. Bingham, received a letter from Dr. Henry S. Bernton, Director of the Child Welfare Association. Incorporated in 1914, this association was established in Washington, D.C. in 1901 as a private charity known as the Washington Diet Kitchen. Congress had appropriated $15,000 in support of the work of this association and in his letter Dr. Bernton suggested possible cooperation of the Research Council to organize some plans for the scientific investigation of children. While such research could not be wholly supported by the association, it offered the use of a small laboratory for use by interested researchers. It appears that Charles B. Davenport (then of the Eugenics Office of the Carnegie Institution of Washington) undertook some anthropometric studies of infants and children of pre-school age in this laboratory, and John B. Watson (then of The Johns Hopkins University) made some studies on the instincts of infants. So much for the background.

At the second meeting of the division in April 1920 a resolution was passed which recognized the pressing need of the scientific investigation of basic facts and principles in the field of child welfare and a committee on

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[1] Prepared from annual reports of the National Academy of Sciences—National Research Council, Minutes of Division and Committee meetings of the Division of Anthropology and Psychology, and from correspondence in the central files (NRC).

[2] Secretary, Division of Anthropology and Psychology, National Research Council.

[3] The Division of Anthropology and Psychology is one of eight scientific divisions of the National Research Council. Its functions are described in an article by S. S. Stevens (The NAS-NRC and Psychology, *The American Psychologist*, Vol. 7, No. 4, pp. 119-124, Apr. '52); and in an unpublished mimeograph report by the author (Anthropology and Psychology: The Borderland Division of the National Research Council, 1954).

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child welfare was created to advise the Child Welfare Association and similar organizations. Walter V. Bingham was appointed committee chairman and its members were S. I. Franz and C. E. Seashore.

The following January (1921) a conference joint with the Division of Medical Sciences of NRC was held to consider proposals made by the Child Welfare and the Women's Welfare Associations. The U.S. Children's Bureau, the Office of Home Economics, and the Junior Division of the U.S. Employment Service were represented at this conference. As a result, resolutions were adopted which recognized the great need of correct information about the principles involved in the conservation and improvement of child life, as well as the health and efficiency of women; and hope was expressed that financial support might be found to inaugurate certain investigations.

Because it lacked financial support, the committee on Child Welfare remained relatively quiescent until 1924, other than to plan for a cooperative exhibit between NRC and the Child Welfare Division of the Sesqui-Centennial Exposition in Philadelphia, 1925-1926. Then on January 15, 1924, a conference was held to discuss the intensive investigation of the mental and physical development of the child from birth to two years of age, and a project was planned based on an expected grant from the Laura Spelman Rockefeller Memorial.

As an approach to the problem R. S. Woodworth, then chairman of the Division of Anthropology and Psychology, had prepared a questionnaire designed to seek guidance from investigators already at work in the field of child development. These questionnaires were sent to over twelve hundred members of scientific societies and somewhat more than one-fourth were returned. One hundred twenty-one scientists reported themselves as being engaged in the study of some problem related to the early physical or mental development of the individual, human or animal. Over half of those reporting were psychologists, and the next largest group (slightly under 25 per cent) were physiologists and physiological chemists. Seven per cent of the total were anatomists and embryologists, and a like percentage distributed between anthropologists and zoologists. The rest were scattered.

There had been almost complete agreement on the desirability of a comprehensive abstracting or reviewing service but none of the government agencies concerned in one way or another with the child was actually in a position to undertake either the proposed abstracting service or the organization of a child research institute.

To prepare for its broader activities the name of the committee was changed to Child Development in 1925. Bird T. Baldwin was appointed chairman and John E. Anderson and R. S. Woodworth members.

Supported by a grant from the Laura Spelman Rockefeller Memorial another conference was held in Bronxville, New York in October 1925.

Specialists in this country and in Canada interested in hygiene, growth, physiology, nutrition, anthropometry, and psychology were invited. In opening the conference R. S. Woodworth outlined briefly the functions of the National Research Council:

> The National Research Council, as its name implies, aims to uphold the ideal of research throughout the Nation. It aims to stimulate and facilitate research. Adopting a military phrase, we may say that it aims to mobilize the scientific workers of the country for an attack upon fundamental problems. It does not aim to dominate the scientific workers of the country, nor prescribe what they shall do and what leave undone. Rather, it aims to be representative of these workers. It is they who must decide what shall be done, and how it can best be done. It is they who must stimulate one another to more energetic and better focused effort, and it is they who, by mutual give and take, must be relied on to maintain and raise the standards of research. Such success—not inconsiderable, indeed—as the National Research Council has enjoyed, has arisen from two causes. First, as a national body representative of the various sciences and of all sections of the country, its judgment and support have carried weight and made possible the initiation of important enterprises which would otherwise have languished from lack of sufficient backing. Second, it has been able to assemble groups of scientific workers, often small groups of those working on specific problems, and by establishing effective contact between them, increase markedly the productivity of the groups and the progress of the questions at issue toward solution.

One of the conclusions of the conference was that most universities did not provide adequate training for workers in the field of child development and so it was recommended that a special committee be established to consider the type and how much training should be required for workers in the field of mental hygiene of young children as well as for those directing and organizing such work.

Beginning April 1, 1926, the Laura Spelman Rockefeller Memorial pledged an annual appropriation of $10,000 for four years to support the work of the committee on Child Development. The committee also served as an advisory body to the Memorial in its awards of scholarships and fellowships in child study and parent education.

During that year the larger part of the work of the committee was to coordinate the studies of about forty graduate students, mostly women, working in universities upon problems of the mental and physical development of the young child. By 1929 one hundred sixteen fellowships and scholarship appointments had been made, fourteen of which were of fellowship grade, from well over five hundred applications. But with the reorganization of the Laura Spelman Rockefeller Memorial and concomitant changes in policy relating to such awards the committee discontinued its formal advisory activities in this area.

Under committee auspices a directory of research in child development was published (*Reprint and Circular Series,* NRC, No. 76, 1927) and starting with seven scientific journals a continuing abstract service was inaugurated, the first mimeographed number appearing in June 1927. Plans were underway to issue six rather than three Abstracts a year, and in 1929 planographing of the publication was begun.

The need for a journal was apparent by 1930 but publication was postponed because of material published by The White House Conference on Child Development. Three years later, however, a series of resumes of unpublished research was added to the Abstracts (Vol VII, No. 2). Despite the economic depression the mailing list of Abstracts and Bibliography was being maintained and in 1932 the committee reported that since 1928 $8,810 had been received from the sale of this publication. Together with funds remaining from the original grant, this amount of money enabled the committee to continue publication.

In May 1929 a 3rd Conference on Child Development had been held in Toronto with a membership of forty-seven, and in June 1933 a 4th conference marked the organization meeting of the Society for Research in Child Development. Like all NRC committees, the committee on Child Development did not constitute a perpetual organization but could well serve as sponsor for a permanent society of individual research workers. The committee obtained a grant from the General Education Board ($6,300 a year for two years to end June 30, 1935) to aid it in establishing a national society, and officers of the society were invited to make use of the committee's offices in the NAS-NRC building. Space was also provided for the publications office and the funds of the society were administered by the business office of the Academy-Council.

With the expiration of its original grant, the General Education Board made available to the society for the next three years $10,500 for support of an editorial office, and $5,000 as a revolving fund. For the year 1936-1937 the Board made an additional grant of $3,500 a year for three years to continue the publications office and publication of the Abstracts (expecting the society to assume full financial responsibility at the end of that time) and a grant of $5,000 to inaugurate the Monograph series. The first of this series appeared in November 1935 and the society took over from Williams & Wilkins Co., publishers, the editing and publishing of the quarterly journal, *Child Development*. In 1939, however, with the expiration of this additional grant from the General Education Board, the funds of the society consisted mainly of subscription fees which were some $2,000 less than estimated expenditures for that year.[4] By this time research was being diverted mainly to immediate war-time objectives and no financial support was forthcoming for work in child development. Notwithstanding, no diminution in society membership took place and by the devoted efforts of officers of the society and members of staff the publications continued.

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[4] It has been pointed out that owing to the situation in the field of child development in its formative years, it was necessarily a secondary field of interest to the majority of members of the society: and it was because of the real interest of the members in the welfare of the child that the publications were supported as well as they were.

At the end of 1937 the society listed 400 members and by the end of 1939 membership had increased to 525. In 1940 the society held its last meeting until March 29, 1946, when its meetings were resumed. This meeting, held in St. Louis, was surprisingly well attended despite difficulties of travel and lack of hotel accommodations, and the interest shown both by members and non-members was most gratifying.

Publication costs were rapidly increasing and subscriptions were not meeting the anticipated deficit. The committee obtained a grant in 1947 from the Parents' Institute to hold a meeting in Chicago to discuss this problem, but by the winter of 1948 the financial situation of the society had become critical.

The Division of Anthropology and Psychology recognized the need for immediate action. It obtained a modest grant from the Council and in March 1948 called a meeting of representatives of the NRC, the Division, the Committee, and the Society. The recommendation was that an attempt be made to secure a small grant to take care of the expected publishing deficit by the end of that current year. With the permission of the Academy-Council, George K. Bennett, then vice-chairman of the division, approached the James McKeen Cattell Fund and obtained a grant of $3,000.

In July 1948 the committee met with the officers of the society to discuss publication problems. A joint report was presented in December of the same year which recommended that the publications program should be carried on entirely by the society; that the publication offices in the Council building be closed; and that editorial supervision of the journals be taken over by an editor-in-chief located in a university center that could provide necessary housing. These proposals were accepted by the officers of the Academy - Research Council, and Northwestern University graciously offered the society space for carrying on its publications. Thomas W. Richards, then of Northwestern University, accepted appointment as editor-in-chief of the publications and as business manager of the society. The task of moving the offices was far from simple, but under the personal supervision of Dr. Richards and with the cooperation of the staff of the council, the move was accomplished in a surprisingly short time.

Subsequently the division's committee on Child Development was reorganized with Robert R. Sears as chairman. At the request of the Children's Bureau, Federal Security Agency (now Department of Health, Education and Welfare) the committee met in April 1949 to advise the Bureau on a proposed research program. There was uncertainty how much money Congress would appropriate for a program, and so nine projects, totalling approximately $350,000, were evaluated as to considered priority. The committee's suggestions were accepted and the projects were placed on the budget of the Children's Bureau for the fiscal year 1951.

For many years the U.S. Children's Bureau, through an informal arrangement, aided in many practical ways to ensure the continuance of *Child Development Abstracts and Bibliography*.

In 1951, at the expiration of his three-year term of office, Dr. Sears resigned as chairman of the committee and Dr. Richards was appointed to succeed him. Recently, in 1954, Dr. Alfred L. Baldwin of Cornell University was appointed to serve as chairman until 1957.

Present officers and council of SRCD are: Dr. H. V. Meredith, president; Dr. Celia B. Stendler, secretary; Dr. T. W. Richards, treasurer; Drs. Icie Macy Hoobler, Esther McGinnis, Nancy Bayley, Carroll Palmer, Roger Barker, and Boyd McCandless, council.

Due to lack of funds, the committee has been quiescent for a number of years, but it is recognized there is still much work to be done in the field and it is the desire of the division, and the Academy - Research Council, that the committee remain in existence. In this way does SRCD maintain relationship with the Council's Division of Anthropology and Psychology, even though on an informal basis.

A CRITIQUE OF STUDIES OF INFANT ISOLATION[1]

L. Joseph Stone
Vassar College

During a dozen years of teaching and thinking in the field of child study, one area with which I have been concerned happens to be one in which I have myself carried out no direct, first-hand research; this area concerns the effects on personality development of early experiences, particularly in the first year or two of life. I should like to share with you some of my thinking about certain theoretical and practical implications of one aspect of this field.

The old issues of heredity and environment take on vivid and new significance when one considers, with something of the concreteness of the embryologist, what hereditary potentialities reach expression under which actual circumstances or how varying conditions may reshape or re-phrase specific hereditary potentials. Until recently, the major environmental variable considered was an over-narrow attack on the problem, namely the study of specific training for skills. The experimental contribution in this area two decades ago was the method of co-twin control: treating (or rather, training) identical twins in different ways. By the use of this method it was possible, for example, to bring reality to the concept of developmental readiness, to demonstrate the inefficacy of untimely training and to show the force of the developmental gradient, to show, for example, that just as the growth of grass pushes boulders apart, the developmental impetus in the individual produces walking when the child is ready to walk, even though he has been held down or even wrapped up in the preceding months.

The data of these studies were widely noted, were taken into account in theory building and found widespread practical application. The rate at which early abilities unfolded was believed to be consistent with the rate of later development. In education, the concept of readiness and maturation was widely exploited. Infantile adherence to the developmental time table was used as one guide—but a strict guide—to adoptive placement. From the studies, it appeared (especially as there was a tendency to generalize beyond the types of activities actually studied) that it really mattered very little what one did in the course of the first year, since development, by and large, would take care of itself. Of course it was necessary for parents to see that babies received adequate nutrition, and beyond that it was their obligation to train the infant in such a way that the responses, as they un-

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[1] Presented as the presidential address before the New York State Psychological Association at the sixteenth annual meeting on January 30, 1953, at New York University, Washington Square, New York.

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folded, were made to appear on appropriate rather than inappropriate signal. It was a period of simultaneous excesses both in Watsonian empiricism and Gesellian nativism somehow wrapped together.

Within this structure, so firm and tight that it was virtually sound-proof, it was difficult even to hear the clamorings of the psychoanalysts and such, who seemed to feel that what was done to the child in the first year in terms of the method and the emotional context of, for example, feeding or toilet training, made all kinds of a difference: or that deprivations, for instance, could make major differences in the kinds of personality that resulted and even in the kinds of activity and the rate of their development. A new sort of cultural anthropologist, too, was telling us that experiences of the infant related to differing child care practices in different cultures—even those experiences of the first year—were important. In effect, we had two child psychologies in the field for some period of time. Actually, these two psychologies did not produce the active conflict that might have been expected because they were hardly within the same universe of discourse. The theoretical and practical implications were contradictory, and it has been rather difficult to reconcile, or even to fit together, the child psychology centering around studies of motor development and learning, and the child psychology based on the dynamics of mother-child relationship and the dramas of nursing and toilet training. Even key words take on quite different meanings in the two contexts. For example, when we speak of *emotion* in the one we think of the age at which laughter appears, the specificity of stimuli to smiling or the conditioning of fears; in the other we think of emotional hungers, need for affection or the circumstances which make for insecurity.

If we try not to take sides but rather to find ways of using both kinds of contribution and attempt to move toward a unified child psychology, the determination of the actual significance of events in the first year of life is crucial but tantalizingly inaccessible experimentally—at least within the bounds of ethical and humane research. The occasional accounts of alleged feral children (10) are teasingly suggestive but woefully undependable; reports of anthropologists are difficult to verify and it is almost impossible to pin down wholly comparable reports of different cultures, significant as each report might seem to be.

All such material, however, hints at the permanent nature of damage produced by deprivation of human stimulation in the early years of development. Cases of isolated children, like the cases of feral children, are always unsatisfactory; they are rarely adequately studied and, at best, the question always remains as to whether we are dealing with what would have been in any case a congenitally feeble-minded child. However, I want to discuss briefly two cases reported by Kingsley Davis (4, 5) because they are representative and because they raise an interesting issue. These were neglected illegitimate children cooped up in attics. Anna was a child discovered emaciated and immobile at the age of 5. By the time of her death (from apparently unrelated causes) at the age of 10, she had recovered to the point of plumpness, rather clumsy locomotion, reasonable toilet habits, and limited speech at a near two-year-old level. In short, she gave the picture of a congenitally defective child.

Davis' second case is of a child who was locked up for her first six years. Like Anna, Isabella was the victim of an irate grandfather who could not bear to see the evidences of his daughter's waywardness. This child seemed feeble-minded at first, although her Stanford-Binet mental age of 19 months and her Vineland level of two and one-half years were noticeably superior to Anna's on her emergence from her hiding place. Isabella was systematically trained. In a week she vocalized; in two months she spoke in sentences; in nine months she was reading and writing; in 16 months she had a vocabulary of 2000 words. Now: Davis puzzles over the contrast between Anna and Isabella. Could the systematic training and better care Isabella received after her release account for this? Or (as he finally seems reluctantly impelled to conclude) was Isabella to start with a more competent child? Possibly this is the answer, but I cannot comprehend Davis ignoring a crucial difference between the two children's experiences of isolation, evident from his own account: Isabella's "mother was a deaf mute . . . and it appears that *she and* Isabella had spent most of their time *together* shut off from the rest of the mother's family." (5, p. 436). (Italics mine). I can only conclude that Davis never alludes to the fact that Isabella's mother shared her "isolation" again because of his assumption that only specific training experiences are relevant. On this assumption, the presence of Isabella's mother would be unimportant because she could not speak to Isabella. But if we are thinking not of specific trainings but of the experience of relationship, do we not have a third solution to Isabella's superior recovery in terms of whatever guesses we can make about the fumblings of this mother towards Isabella in the dark and the silence?

In contrast with such reports of single cases, it was with a great sense of discovery and of the opening of vistas that about eight years ago I came upon René Spitz's exciting studies, with Katherine Wolf and others (21, 22, 23, 24, 25), of the devastation of the developing personality produced by inadequate mothering in the first year of life. Here was a way of dealing with the very essence of the interaction between heredity and environment; here was evidence that social stimulation is itself a biological necessity; here was a chance to determine the basic psychological conditions for the development of human personality; not the effects of specific training but the underlying nurturing conditions without which normal growth, learning and development cannot take place.

In these studies, Spitz showed that healthy, happy babies whose mothers gave them into the care of others for periods of weeks or months in the last half of the first year of life became depressed, weepy and unresponsive —only to recover their earlier bounce and to make up for the lost developmental ground immediately after the mother's return. Even more strikingly, children who had shown above-average levels of development for four or five months, whose mothers then went permanently out of their lives while the children received the best of institutional care, were severely retarded by the age of one year in every measurable aspect of development, were more prone to disease, and incapable of normal human relationships. To cite Spitz's report of the follow-up of 91 children after two years, 27 children of those observed originally had died (although in the control institution in which mothers were present there was not a single death), "in spite of good food and meticulous medical care," some of the other children could no longer be followed as they "were adopted, placed in other institutions or simply lost from sight," of the remaining 21 "only 3 had the normal weight of a 2-year-old, and only 2 attained the length normal at this age. . . . Of these 21 children, of which the youngest was 2½ years old, only 5 could walk unassisted, only 1 had a vocabulary of a dozen words, and only 1, a 4½-year-old, used sentences. On the other hand, 8 of these 21 children could neither stand nor walk, 6 could not talk at all, and 11 were limited to the use of 2 words." (24, p. 13; See also 22). In the simplest terms: developmental quotients which had started at 124 (at about the time the mothers left the children) had declined by the end of the first year to 72; by the end of the second year to 45. In addition to such shattering verbal accounts as these, Dr. Spitz offered his motion pictures (like GRIEF[2]) which are soul-searing in their impact, as one observes the tragic depression of the babies under temporary deprivation or sees the "human wrecks" of children between a year and a year-and-a-half of age who have been without their mothers since they were four months old. In all this, let us add at once, what is at issue is not the presence or absence of the biological mother under ordinary home conditions but the impact of institutional care when the mother is withdrawn and no consistent mothering person substitutes for her.

We owe Spitz a great deal for his ingenuity in taking advantage of existing social circumstances to set up an experiment-like research design. We must be grateful to him, too, for the dispassionate accumulation and reporting of measurements, and their cinematic documentation. We have, however, some cause for complaint (or, perhaps, merely impatience) over the lack, as yet, of measures of dispersion or of concrete hour-by-hour schedule and description of the actual contacts of institution personnel with the children, their methods of feeding the infants, etc. However, it seems appropriate at this point to accept at face value Dr. Spitz's report that the significant variable was the shift from a full-time mother to the equivalent of 1/12 or 1/15 of a mother.

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[2] Film distributed by New York University Film Library. 30 minutes, black and white, silent.

Although Spitz's studies were not the first in the field, and although critics have indicated flaws in his necessarily imperfect quasi-experimental procedures, his studies are nonetheless the most telling and best focused of an entire array of studies which, though made under many different circumstances and in many quarters of the globe, show remarkable convergence. Time does not permit me to do more than mention studies and reports by Levy (15), by Bakwin (1), by Goldfarb (11, 12, 13), by Anna Freud (9), and others. We may summarize them by saying, with Bowlby (in his recent survey of the literature for the World Health Organization) that:

> . . . the evidence is now such that it leaves no room for doubt regarding the general proposition—that the prolonged deprivation of the young child of maternal care may have grave and far-reaching effects on his character and so on the whole of his future life (3, p. 46).

I shall also have to limit myself here to the mere mention of the evidence that a degree of deprivation less than that which virtually obliterated Spitz's group seems particularly likely to result in the pattern of incapacity for human relationships which we know as the psychopathic personality (2, 11, 15). I should like, rather, to go on to another statement of Bowlby's which sets the issue for most of the rest of what I wish to say:

> Although it is a proposition exactly similar in form to those regarding the evil after-effects of rubella in foetal life or deprivation of vitamin D in infancy, there is a curious resistance to accepting it. (3, p. 46)

Bowlby speaks of the resistance of psychiatrists: I am more concerned with the resistance of psychologists. I think in both cases the resistance may have been in part on the basis which Bowlby advances:

> Reluctance to accept it is, perhaps, because to do so would involve far-reaching changes in conceptions of human nature and in methods of caring for young children. (3, p. 46)

I infer the resistance from the fact that the work of Spitz and others in this field has scarcely been noted in recent textbooks of child psychology; from the critical and suspicious comments that psychologists make to me informally about this work (in somewhat the tones that experimenters usually reserve for ESP or, perhaps, the Rorschach!) and on a few explicit criticisms.

Admittedly, a major flaw in the work of what I may allude to as the "psychodynamic wing" of child psychology has been the paucity of experimental evidence, the argument from clinical instances, and the great willingness of its proponents, nonetheless, to offer suggestions regarding the desirable emotional climate for child care. Actually the basis for such advice has, I think, been sounder than its critics recognize. For one thing, this is primarily a medically or psychiatrically or clinically oriented group, and it has been less concerned with marshalling and citing the evidence that a well-trained psychologist can bear. Whatever the reasons, however, there has been in the other wing of child psychology a noticeable impatience with these pronouncements. This impatience, as it bears on the problem of infantile experience, has been eloquently stated with remarkable documentation and justification in Pinneau's (16) breathtakingly complete demolition of Margaret Ribble (17, 18) and all her works. I commend you his article as a kind of hydrogen bomb perfection of destructive criticism; not a paragraph is left standing for miles around. Dr. Ribble, you will recall, is one of the upholders of Mother. Under the label of marasmus she has pointed to phenomena of developmental disruption much like those described by Spitz. In reports based on (largely unshared) clinical observations of 600 infants she finds an innate need for handling by the mother. She observes the helplessness of the newborn infant; she observes periodic mass activity and muscular tension disappearing upon suckling or close contact with the mother and finds, too, that the young infant readily goes into "functional disorganization" (irregular breathing, unstable circulation, and disturbed digestion). She makes, in fact, a number of *descriptive* statements about the appearance and behavior of the unloved baby, whose accuracy is attested by their essential agreement with descriptions by others. However, sheer descriptions are rather difficult to extricate from the physiological theories which Ribble interposes between the fact of maternal deprivation and the fact of disturbed development. We are told, for instance, that there is inadequate and unstable distribution of blood circulation for the first two or three months; that for a similar period the child experiences an inadequate oxygen supply and frequently may suffer from partial suffocation. The disturbed digestion of the baby who is not held in the arms sufficiently is said to be produced by his swallowing air and developing colic. The "tensional states" describe the infant's struggle against a tendency to cerebral anoxia.

Pinneau proceeds to square away at these and other Ribbleian doctrines and proceeds in this connection to demolish the doctrine of Mother as well. In a sustained barrage, drawing with meticulous scholarship on a bibliography of 88 psychological, pediatric, anatomical, physiological, embryological and biochemical sources he utterly disposes of Ribble's physiological explanations. He cites evidence to show that circulation becomes stable and non-foetal in nature within the first day or two of life; he shows that the infant's oxygen supply is superb, that irregularities of breathing are of no import, that respiration is stabilized in the first few days, and that there is no basis for the notion that crying is a response to partial suffocation. With regard to digestion, he marshals reports that all infants swallow air; and completely undercuts Ribble's concept of tension in relation to the danger of neurological "functional disorganization." (Because it is irrelevant to the present discussion, I will omit his material on the relative virtues of breast and bottle feeding.) With this evidence, Pinneau rejects Ribble's thesis, a thesis that he states in these terms: "that infantile experience is of great importance in directing the development of the infant's personality *because of* instability and inadequate organization of primary body functions." (16, p. 203) (Italics mine.) He rejects her view, above all, that the infant requires a long period of attentive mothering. Now, this is a very serious conclusion. Obviously, it points to the rejection not only of Ribble but of all others who, presumably out of whimsicality or sentimentality, plump for sustained mothering experience. There is every evidence that Pinneau intends just this. He cites with approval, studies in which normal development was shown in infants whose experiences of mothering, in Pinneau's words, "were carried to the opposite extreme."

Here, in the truest sense of the cliche, Pinneau is guilty of "throwing out the baby with the bath." Granted that Ribble's physiological underpinning is of the flimsiest sort, what Pinneau fails to note is its remarkable *irrelevance* to the basic question regarding the need of mothering. Actually, this was long evident and puzzling even to very sympathetic critics of Ribble on child development. For example, Kubie reviewed one of Ribble's books (*The Rights of Infants*) in 1945:

> . . . Its spirit and its purpose is profoundly right. Its emphasis on the importance of the emotional factors in child care from the very moment of birth is sorely needed as a corrective. . . . On the other hand, when one turns to the detailed physiological data which the author adduces to support her thesis, one is troubled. Sometimes the physiology is naive. Often it is dogmatic when it ought to be tentative . . . In fact the whole picture of the relationship of sucking and respiration to anoxic states, though interesting and provocative is hardly the open and shut affair that the author describes. . . . the particular type of interdependence of one on the other which the author describes, making the sucking process and the learning of sucking almost a panacea to all of the infant's struggles may well turn out to be a partial truth. . . . It is somewhat puzzling therefore that from an argument, which both physiologically and psychologically must be characterized as naive, the author arrives at conclusions which in the main one must support with enthusiasm . . . [but whose substantiation] is in the nature of elaborate partially-scientific rationalizations (14, pp. 415-416).

In other words, the fact that Ribble advanced the wrong reasons ("because of instability . . . of primary body functions") for the need for mothering is scarcely justification for discarding observations validated by many others (whom Pinneau does not mention) and to conclude that her basic premise ("infantile experience is of great importance in the development of the infant personality") is wrong. Yet Pinneau's masterful critique has been used to call the entire field into question. As a matter of fact, Pinneau's scholarly care breaks down in what I regard as the crucial last section of his paper which he entitled "'Mothering' as related to the infant's development." With Pinneau, we can applaud a part of Orlansky's sweeping criticism of Ribble:

> It is unfortunate that such an influential writer has not attempted to draw a line between her empirical findings and her personal opinions (as quoted by Pinneau, 16, p. 222).

Yet Pinneau himself has confused the findings on the effects of deprivation with Ribble's rationale for them. The one direct piece of evidence which he cites does *not* deal with deprivation of the sort we are here discussing, and does not deal with "the opposite extreme" of infant care. The studies by Dr. and Mrs. Dennis (6, 7) have been misused by others as well as Pinneau, largely because they were unfortunately named studies of "minimum social stimulation." Recently, in his *Readings in Child Psychology* (8) Dennis has reprinted much of the material of the earlier publications under the happier title of "Development Under Controlled Environmental Conditions." Dennis, of course, was primarily concerned with *restricted practice* of specific activities. (His study enriches our understanding with the concept of autogenous behavior—a term developed to broaden the concept of "instinctive" or "maturational" to include those responses which are, at least to some extent, learned but learned under self-imposed practice.) However, the mischievous phrase *minimum social stimulation* is, after all, in his reports and, what is worse, it has been misused by those who use Dennis second-hand.

Let us see now precisely *how* isolated the infants were; how minimal was their social stimulation—since, for our purposes, the whole story hinges on this. First, we observe that the period of most marked isolation was when we would expect it to be least injurious: after the first six months most restrictions were removed. All the evidence to date from other studies is that the *latter* part of the first year is crucial with respect to damage produced by isolation.

Second, we find that the babies, by Dennis's own statement, "were not 'isolated'" (7, p. 155). Basically, I suppose the trouble was that the Dennises are decent human beings and could not bring themselves to impose restrictions of the sort that are apparently involved in Spitz's study or in the occasional accounts of illegitimate children hidden away in attics. Another trouble was that the Dennises were just too interested in the babies to leave them alone very much. According to their report, the babies were visited on the average of twelve times a day and one, or both, experimenters were in the room during two hours of the day. They also point out that during this period of the first half of the first year all ". . . infants are awake but little longer than is required for feeding, bathing, and dressing." And how much attention did these babies receive? "The subjects were taken from their cribs only for feeding, bathing, cleaning, and dressing *and* for a few experiments." (6, p. 150.) Moreover, "We did not smile at the subjects nor did we speak to them, romp with them, or tickle them *except* as these actions occasionally were incorporated into routine experiments. We talked to each other when in the nursery *but* did not direct our remarks to the infants." (6, p. 150) (Italics mine.)

> In addition to entrances into the room which were made in order to care for the infants and to experiment with them, several entrances per day were made solely to note down the condition and activities of the babies (7, p. 155).
>
> When either infant cried insistently, we entered the room and corrected whatever condition seemed to be the cause of the cry. We did not adhere rigidly to the feeding schedule (6, p. 150).

Incidentally, beginning the twenty-seventh week the Dennises allowed themselves to smile back at the twins and to speak to them, and even permitted themselves to fondle and play with them. This was done in such a way as not to reward the performance of any specific act. "We romped with the children, as by shaking or rolling them only when they were indifferently employed with some response that was already well established." (7, p. 152). But this does throw a sidelight on the Dennises' regrettably human responsiveness to the infants.

While the twins did not receive as much actual handling as, say, Ribble would have wished, it seems evident that (unlike the "human wrecks" in Spitz's experiment) the infants did receive enough personal attention from the Dennises to respond to them early as persons. In fact, the observations stress the infants' response to the human face and a number of other specifically personal responses. While it is true that the experimenters did not fondle the babies, I am sure that their bathing, dressing and feeding were not slap-dash. I doubt whether it made much difference to the babies that the Dennises did not address their remarks to them! These restrictions, in fact, are scarcely greater than those in the first six months of the lives of an entire aseptically raised generation of American babies. Nor can I believe that the twins were much affected by the reported absence of pictures, mirrors or elaborate furnishings nor by the restriction that visitors were not to enter unless accompanied by the Dennises! Incidentally, if we are to follow—as I hope we do—the advice of the current edition of the Government's pamphlet on Infant Care, the babies had an advantage over their contemporaries who were raised in accordance with the then current edition: "No elimination training of any kind was undertaken." (7, p. 154)

In one of his articles on the twins Dennis concludes, "The infant within the first year will 'grow up' of his own accord." (6, p. 157) The implication is that this is true even *under conditions of minimum social stimulation.* I think we can accept this statement if we add one word: The infant within the first year will 'grow up' of his own accord under conditions of minimum *adequate* social stimulation. *This* kind of minimum the Dennises obviously supplied and, perhaps, have helped to define.

What is clear, then, is that our experimental task is to address ourselves to detailing and specifying precisely what is *adequate social stimulation* and in what respects it is adequate. Spitz, for one, has made a beginning at partialing out the time factor to show that neglect is most dangerous in the last quarter of the first year. We have some hints that optimum care preceding neglect may make for more severe acute effects and less severe chronic effects. We have some indication from Spitz and from Roudinesco (cited in 3) of the conditions under which recovery of varying extents is possible. We have indications from Anna Freud, Goldfarb, and others that institutional care has particularly pernicious and permanent effects on language and speech development. All in all, there are many indications that, as with embryological tissues, those functions which are most actively developing are most vulnerable to damage from deficiency at that moment. We need to stabilize and confirm this sort of information and we need to extend it much further. For this reason, it is fortunate that the World Health Organization has recognized this as a crucial area of study and that one of the major American university centers for research in child development is now planning to undertake systematic research in this direction. I can think of few areas of research more promising of reward than this. What precisely are the significant ingredients in the mothering relationship? Is it a specifically *humanizing* process, or to what extent is it essential in mammalian development in general? Recent studies of chimpanzees and of goats suggest some extension of this work under controlled conditions with animals. What mothering practices are particularly valuable or particularly harmful at which stages of development, and at which later stages of development will the damage or the benefit be evident (as in Bowlby's teen-aged delinquents)? Here is opportunity for physician, experimental psychologist, clinical psychologist, case worker, and sociologist to join hands in order to arrive at some of the very fundamentals of the influences which shape and misshape human personality.

I should like to add that this is an area in which we are under obligation to foster social applications of our views on personality development while they are yet in the stage of the best guess, responsibly weighed. For the sake of the human lives involved we cannot afford to wait until all the evidence is in, because in the meantime something *is* being done with these lives. At the same time that we are scientifically cautious and critical of our findings and ever eager to revise our views we must cry out against practices which soundly-based hunches suggest to be dangerous to human development and human personality. For example, we know enough already, I think, to insist on the earliest possible adoption of infants. Some adoption agencies now are moving in the direction of such placement and permitting adopted parents to take—as they are usually willing to take—some of the risks of imperfection which natural parents take on the grounds that early family care itself appears to be one of the fundamental safeguards for normal development. Likewise, we now have good reason to feel that a depressed developmental quotient in a six-month-old infant may not mean poor hereditary equipment; it may reflect deprivation: the absence—not of specific training—but of the basic stimulation by human relationship which appears to be a prerequisite to normal growth. Again, where institutional care is a necessity we know now something of where the dangers of institutionalizations lie and we must encourage (what many hospitals and foundling homes are now doing) the provision of people, in addition to the nurses, who are free to play with and stimulate the infant and young child, and also feel it is a worthy and valuable thing to do.

Perhaps all of this sounds breathlessly new. Of course it is not. Pioneer studies like Ripin's (19) appeared long before those I have cited in detail. In fact, Dennis (7, p. 179) mentions Herodotus' account of an attempt to rear two infants in silence several centuries B.C. I should like to close my own remarks with the account by the historian Salimbene, writing in the 13th Century of the Emperor Frederick II:

> . . . he wanted to find out what kind of speech and what manner of speech children would have when they grew up if they spoke to no one beforehand. So he bade foster mothers and nurses to suckle the children, to bathe and wash them, but in no way to prattle with them, or to speak to them, for he wanted to learn whether they would speak the Hebrew language, which was the oldest, or Greek, or Latin, or Arabic, or perhaps the language of their parents, of whom they had been born. But he laboured in vain because the children all died. For they could not live without the petting and joyful faces and loving words of their foster mothers. And so the songs are called "swaddling songs" which a woman sings while she is rocking the cradle, to put a child to sleep, and without them a child sleeps badly and has no rest (20, p. 366).

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THE MEASUREMENT OF RESPONSIBILITY IN CHILDREN[1]

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The study of the sense of social responsibility in human affairs seems a particularly appropriate subject, in view of social and political events of recent years, for an interdisciplinary research effort in social science. How this sense develops in children, its correlates, and the crucial age levels, if any, in its organization become of immediate practical concern to educators and parents as well as of theoretical concern to the disciplines interested in child development.

We have attempted to study responsibility in terms of what is expected of the child by his parents and teachers, and by his peers. We began with a number of assumptions and hypotheses. We assumed that responsibility is more an attitude than a knowledge, skill or aptitude. We thought of responsibility as a constellation of attitudes toward work, and toward personal relations in the family and in the community—attitudes which are consistent and imperative and thus serve, with other attitudes, to organize the individual's behavior. Our basic hypothesis was that work experiences in early childhood, adjusted to the maturity and ability levels of the child and including both remunerative tasks and household chores, are significantly correlated with the development of a sense of social responsibility. This is a well-known assumption in the folklore and even the semi-professional literature of child-rearing. Another hypothesis was that a sense of responsibility develops with age, and that proper measurements will show increasing amounts of sense of responsibility in successive age samples of children. Other hypotheses were that various measures of responsibility can be shown to be positively correlated, and that sex and habitat differences are such that rural girls, rural boys, city girls and city boys show, in that order, decreasing amounts of responsibility at any given age, when ability and economic levels are held constant. One can also hypothesize that when work experiences within or outside the home are held constant, the above

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[1] The studies to be reported in this and other articles have been carried on by the Laboratory for Research in Social Relations at the University of Minnesota under grants from the Graduate School; the College of Science, Literature, and the Arts; and from the Carnegie Corporation. Most of the data on rural and town groups were collected in cooperation with the University's Institute of Child Welfare, through the courtesy of John E. Anderson, Director.

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differentials disappear. We have also hypothesized that responsibility will show a positive but not necessarily high correlation with intelligence, and that it is positively correlated with "desirable" personality characteristics.

Our basic sample consisted of more than 3,000 children in rural[2] and town[3] areas of Minnesota, in school grades 4 through 12, and more than one thousand children in the same school grades in a metropolitan center. Our basic instruments consisted of several paper and pencil questionnaires and attitude scales. One criterion measure of responsibility was a Citizenship Scale based on a series of items developed by Gough, McClosky, and Meehl (1), who together with Kenneth Clark and Arnold Rose have constituted a research team in this laboratory for a study of political and social awareness and responsibility in adults. The scale as used in the present study contained 48 items originally selected as differentiating responsible from less responsible groups based on peer judgments in two high schools and one college population. In these preliminary studies, young people were given a definition of responsibility involving willingness to accept the consequences of one's own behavior, dependability, trustworthiness, sense of obligation to the group and to one's own values. An attempt was made to get the youth to think not in terms of leaders but in terms of individuals who always do their part, who are "straight shooters," who inspire confidence in others. Subjects were asked to nominate, using a "Guess-Who" technique, those classmates who closely fitted this description and those who closely fitted an opposite description. A large number of attitude items were submitted to members of such contrasted groups in each of two different high schools and in a population of college fraternity groups. Only those items which satisfied at least a 5 per cent level of significance in *each* of the three separate studies were incorporated into the final scale of 48 items. For the present study the wording of a few of these items was simplified in order to permit older elementary school children to handle them. The items include a few relating to behavior and personality descriptions such as, "I would sneak into a movie if I could do it without being caught," "When someone does me a wrong, I want to pay him back if I can," "In school I am sometimes sent to the principal for being bad," and a good many social attitudes such as, "We ought to let Europe get out of its own mess," "The person who doesn't vote is not a good citizen," "People should not mind paying taxes because it is one of the things we can do for what we get from the community." These items were to be answered on an agree-disagree basis.

Tests were given in group settings, but in 4th, 5th, and 6th grade groups the test administrator read each item aloud to the children, asking them to read it to themselves and to record their answers before proceeding to the next item. Test administrators reported uniformly that the children showed a great deal of interest and cooperated excellently.

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[2] Living on farms or in communities of less than 300.

[3] Communities of from 1000 to 7000 population.

A second measure of responsibility, called a Teacher Check List, was drawn from the studies on responsibility of adolescents (2) made by the Committee on Human Development of the University of Chicago.[4] This scale presents 28 items to the child's teacher, who is asked to read the items and to check, for a particular child, each statement which is true of him. The items are scaled according to the Thurstone method to represent steps on a continuum of responsibility. Scale values are available for each item, and the median scale value is taken as the child's score. Such items as the following appear in the series—"dawdles at his work," "can never be depended on to complete a job," "is careless about school property," "sees jobs to be done and does them without waiting to be asked." In addition, each child supplied considerable information on a questionnaire having to do with his use of money, his work experience and his home chores and duties.

The statistical reliability of the measures may be expressed in several ways. One sample of approximately 300 children took the same measures a year after the original testing. Retest correlations for these children on the Citizenship Test were of the order of +.35 for the boys and +.52 for the girls. A second and different group of teachers completed the Teacher Check List for these children one year after the initial rating. Their results correlated with ratings given by teachers of the previous year yielded values of +.42 for the boys and +.32 for the girls. While these values are low for retest estimates of reliability it must be remembered that a full year intervened between the taking of the two measures; longitudinal measures generally show a sharp falling off of correlation values in time. Mean scores of the two performances do not differ significantly for either measure. A group of fifth and sixth grade children retook the citizenship measure after an interval of two weeks. Correlation values of +.64 and +.88 for the boys and girls, respectively, resulted. Gough and his colleagues report a split-half correlation of .73 for 221 ninth grade children (1).

Table 1 gives the means and standard deviations of citizenship scores for each age group of boys, separately for urban, town, and rural portions of the sample. Table 2 gives comparable data for girls. An analysis of variance of the data summarized in these tables showed that there is statistically significant variation (beyond the .01 level) among means of age groups, of habitation groups, and between sexes. Older children score higher than younger children, girls score higher than boys, and urban children score above rural children. In terms of standard deviation units, the sex differences are appreciably larger than age or habitation differences, the difference between the means of the sexes being of about the order of half of a standard deviation of the boys' or girls' scores, all ages combined. Careful inspection of Tables 1 and 2, however, fail to indicate the marked age-group mean differences, expressed as a fraction of the variance of any one age group, which child psychologists frequently find in so-called "personality" materials. If it be objected that, after all, these items were not selected to reveal age differences, it may be added that such has been true for other types of attitude and personality tests, which nevertheless do indicate an age process when applied to widespread age groups of children and adolescents.

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[4] Used by permission of Professor Robert J. Havighurst.

TABLE 1

MEANS AND STANDARD DEVIATIONS OF SCORES FOR BOYS ON "HOW I FEEL ABOUT CITIZENSHIP" TEST

	RURAL			TOWN			URBAN		
Age Group	*N*	*M*	*S.D.*	*N*	*M*	*S.D.*	*N*	*M*	*S.D.*
9	107	24.18	4.60	44	25.14	4.96	37	24.54	4.96
10	142	23.74	5.12	62	24.98	5.20	53	24.98	4.68
11	119	24.34	4.32	70	24.66	4.92	62	26.34	5.00
12	141	24.90	5.00	51	25.98	5.36	50	27.42	4.56
13	109	25.26	4.68	59	23.86	4.56	46	27.22	5.32
14	91	24.18	5.20	52	24.42	5.92	60	26.18	5.32
15	63	24.02	4.84	46	24.98	4.60	51	25.82	4.32
16	60	24.50	4.88	38	24.78	4.68	50	26.38	4.68
17	45	23.62	4.60	44	25.42	5.00	57	26.42	5.44
18 and over ...	17	24.10	3.88	22	24.94	5.84	20	28.10	5.24
Total	894	24.36	4.72	488	24.88	5.02	486	26.26	5.04

TABLE 2

MEANS AND STANDARD DEVIATIONS OF SCORES FOR GIRLS ON "HOW I FEEL ABOUT CITIZENSHIP" TEST

	RURAL			TOWN			URBAN		
Age Group	*N*	*M*	*S.D.*	*N*	*M*	*S.D.*	*N*	*M*	*S.D.*
9	105	26.54	4.60	67	26.50	3.88	47	26.10	4.12
10	134	26.06	4.52	64	26.58	3.84	51	26.90	4.60
11	108	27.02	4.36	59	26.58	5.32	57	28.22	4.88
12	109	27.22	4.56	81	27.22	5.00	49	29.18	4.96
13	99	26.54	4.48	54	25.50	6.98	46	27.14	5.56
14	75	27.06	4.60	87	28.30	5.12	78	27.86	4.96
15	63	26.50	4.60	71	27.42	4.84	79	28.14	5.72
16	55	27.02	4.92	78	27.26	4.88	56	29.94	3.84
17	42	27.02	5.24	83	29.54	4.08	79	30.14	4.48
18 and over ...	8	27.50	4.48	17	29.74	4.24	16	29.50	3.48
Total	798	26.73	4.52	661	27.41	5.03	558	28.34	4.96

TABLE 3

MEANS AND STANDARD DEVIATIONS OF SCORES FOR BOYS ON "TEACHER CHECK LIST" RATING SCALE

	RURAL			TOWN			URBAN		
Age Group	*N*	*M*	*S.D.*	*N*	*M*	*S.D.*	*N*	*M*	*S.D.*
9	107	57.2	20.8	44	49.3	23.9	37	53.1	23.1
10	142	52.2	22.7	62	59.2	21.6	53	54.6	23.5
11	119	54.9	21.7	70	52.6	22.3	62	55.3	21.8
12	141	56.6	21.1	51	52.8	22.3	50	56.6	22.2
13	109	57.0	20.7	59	59.6	19.6	46	54.8	21.3
14	91	50.8	22.6	52	54.2	24.7	60	58.3	20.2
15	63	51.3	21.4	46	52.4	22.6	51	54.0	22.7
16	60	45.7	21.4	38	58.2	21.2	50	49.4	21.9
17	45	46.6	20.7	44	56.8	21.2	57	53.4	20.3
18 and over . . .	17	52.6	21.8	22	60.5	18.5	20	50.5	20.6
Total	894	53.5	21.1	488	55.3	22.0	486	54.4	21.1

TABLE 4

MEANS AND STANDARD DEVIATIONS OF SCORES FOR GIRLS ON "TEACHER CHECK LIST" RATING SCALE

	RURAL			TOWN			URBAN		
Age Group	*N*	*M*	*S.D.*	*N*	*M*	*S.D.*	*N*	*M*	*S.D.*
9	105	65.4	18.8	67	64.6	19.0	47	66.2	20.7
10	134	65.5	19.8	64	61.6	21.1	51	67.0	17.3
11	108	66.0	19.3	59	64.8	19.4	57	65.7	18.6
12	109	65.2	20.6	81	62.7	22.1	49	70.5	10.7
13	99	67.1	16.4	54	68.7	16.8	46	69.6	13.6
14	75	66.3	18.4	87	62.9	20.9	78	69.6	13.9
15	63	64.8	18.2	71	54.2	28.6	79	70.3	13.2
16	55	62.8	20.5	78	55.3	25.8	56	72.3	14.8
17	42	61.7	20.3	83	65.2	19.2	79	62.8	19.5
18 and over . . .	8	63.8	22.6	17	56.8	17.6	16	63.8	17.6
Total	798	65.3	19.0	661	61.9	22.0	558	68.0	16.0

By the Co-variance technique, the data summarized in Tables 1 and 2 were re-analyzed. Even when the mean scores of subclasses were adjusted for age differences, the score differences between means of sex groups and of habitation groups remained significantly greater than zero.

Tables 3 and 4 present means and standard deviations of Teacher Check List ratings for each age group of boys and girls, separately for urban, town, and rural portions of the sample. The analysis of variance technique applied to these data indicate that differences between the means of the sexes, and between those of habitation groups are significantly greater than zero at the one per cent level, whereas the means of age groups vary sufficiently to satisfy the five per cent criterion, though not the one per cent level. While the interaction variance appeared to be significant here, the breakdown of interaction to test components requires an equalization of subclass numbers which we did not observe. Again in terms of the over-all variation, the sex differences are greater on a gross basis than the rural-urban differences, the sex differences being roughly of the order of half a standard deviation of scores of either sex group, all ages combined. Accustomed to the relatively greater differences one finds among child groups on many personality and attitude characteristics, one is constrained to remark on the *absence* of pronounced trends. The difference between the sexes is perhaps to be expected, as girls commonly have a reputation of greater dependability with teachers. The habitation differences are likewise in line with what is often found in rural as contrasted with urban groups, especially as selective intellectual and social factors are undoubtedly involved. The age trends, while in the desired (and expected) direction, are not as pronounced as are found in many personality and adjustmental features. Indeed, the somewhat lesser evidence for an age trend in this measure is, perhaps, not so unusual; after all, teachers were rendering relative judgments, each to her own group.

Correlation of the two measures produced some interesting results. A set of correlations between each of the measures and several of the face sheet informational items was drawn up separately for the ten-year-old groups and fifteen-year-old groups. The correlations were calculated separately for boys and girls in each of three habitation areas—the urban sample, a rural sample, and a town sample. In general, the correlational matrices are comparable from sample to sample; no consistent differences appear among sex and habitation groups. Each value which appears in Table 5 is the mean of six coefficients, thus combining the data for boys and girls from the three habitation areas. There are small relationships consistently of the order of +.05 to +.20 between each of the responsibility measures and socio-economic status as indicated by paternal occupation.[5] For socio-economic status as represented by the Sewell Scale (3) the values are slightly higher, +.22 to +.26. Correlation values between the measures of responsibility are low but consistently positive in the ten-year-old group, whereas in the fifteen-year-old samples correlations between the two measures (except for one group) run consistently higher, suggesting that the characteristic of responsibility may become somewhat more organized as a characteristic as learning processes occur in development, even though mean scores do not show much trend from age to age.

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[5] To agree conceptually with relationships understood by the term "positive," the signs have been reversed for the Minnesota Occupational scale, which gives a numerically high value to "low" status.

This study offers a strong argument against several hypotheses which are rather widely held. There appears to be no highly organized trait of responsibility, as such, in childhood, though by mid-adolescence there is evi-

TABLE 5

SUMMARY OF INTERCORRELATIONS, BASED ON TWELVE TABLES OF INTERCORRELATION VALUES, FOR RURAL, TOWN, AND URBAN BOYS AND GIRLS IN TWO AGE GROUPS

Mean values of r are presented*; the values in parentheses indicate the range of r's for the six subgroups

	10 YEAR OLDS ($N = 499$)			
	1	*2*	*3*	*4*
1. Paternal occupation†				
2. SES score‡	+.14 (−.15 to +.28)			
3. Number of sibs	−.11 (−.16 to +.01)	−.23 (−.26 to −.16)		
4. Citizenship score	+.15 (+.10 to +.35)	+.22 (+.16 to +.30)	.00 (−.08 to +.05)	
5. Teachers Check List score	+.05 (−.06 to +.22)	+.24 (+.03 to +.40)	−.13 (−.29 to −.03)	+.23 (+.04 to +.27)
	15 YEAR OLDS ($N = 366$)			
	1	*2*	*3*	*4*
1. Paternal occupation†				
2. SES score‡	+.24 (+.04 to +.38)			
3. Number of sibs	−.03 (−.16 to +.25)	−.29 (−.38 to −.20)		
4. Citizenship score	+.22 (.00 to +.42)	+.26 (+.12 to +.51)	−.12 (−.17 to −.08)	
5. Teachers Check List score	+.12 (−.14 to +.25)	+.24 (+.02 to +.36)	−.26 (−.40 to −.16)	+.34 (+.09 to +.45)

* z transformations were not used because so many of the values are close to zero and would change very little.

† The Minnesota Occupational Scale (the signs on this scale were reversed, to permit positive signs to be associated with high status).

‡ Based on the Sewell scale (3) of socio-economic status.

dence that the two measures are beginning to assess something in common, though much of the variance in each cannot be accounted for in terms of the other. While girls are judged as more responsible than boys, the difference is not large on a gross basis. Rural children cannot be said to surpass urban children in the aspects of responsibility herein studied. Furthermore, and perhaps most important, this study reveals little evidence for a marked developmental progress in the child's *amount* of responsibility as expressed in either instrument.

Two possibilities suggest themselves. One is that responsibility as we define it among children gets "set" in early childhood, prior to the intermediate grades. Such characteristics as stability, dependability, conformity, efficiency, and not yielding to self interests, which are encompassed in the term "responsibility" are discriminable in young children and are common features of rating scales and descriptive devices for children. Another possibility is that the characteristic as we ordinarily think of it has meaning only in adult situations, is an emergent in maturity. The only evidence in this paper to suggest such an hypothesis is the consistently greater correlation of the criterion measures at age 15 than at 10. Such an hypothesis is also suggested by the not unusual observation that irresponsible, undependable children who "fail to show their good training" do sometimes settle down and increase in reliability during early maturity. As the widening life space includes experiences which have a greater "reality quality," the individual modifies his behavior along lines provided by basic attitudes laid down in earlier years but never adequately evoked by the less demanding, less urgent quality of the child's life. The child lives at a more "irreal" level and is protected by more powerful persons who can and do step into his experience to rectify, simplify, and control, and the child knows it. Such is not true for adults, and the child observes that, also. Thus the "demand-quality" of experience may exert a significant influence, to teach attitudes of responsibility. This point of view is also suggested by the child training literature, which frequently holds that jobs and experiences made up for the child in order to provide him desirable training prove to be less useful than tasks and experiences which arise within the child's own motivational context and are relevant to his own interests. Whether home duties and tasks commonly given children have any influence on the child's reputation for responsibility will be investigated in another paper.

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THE RELATIONSHIP OF CHILDREN'S HOME DUTIES TO AN ATTITUDE OF RESPONSIBILITY[1]

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Advisory literature to parents usually contains the assumption that giving children tasks around the house has merit in training for independence, dependability, or "responsibility," as it is frequently put. These tasks are not infrequently resisted by children; common parental queries have to do with how to get children to accept their duties more willingly. Indeed, children, when asked how they think their parents would like to have them improve their behavior, mention "do my chores" as second or third in a long list of characteristics offered; this is true of boys and girls alike and at all ages from six to fourteen (2).

Another paper by the writers describes the measurement of responsibility in children from nine to eighteen years of age (3). One measure, "Teacher's Check List," was a Thurstone-type rating scale of responsible behaviors applied individually to each child by his classroom or home-room teacher. The other, "How I feel about Citizenship," was a series of attitude items calling for agreement or disagreement and dealing with civic responsibilities of grown-ups, children's obligations with respect to school, and a number of personality and interest characteristics, all found to be valid with respect to reputation with peers and with teachers for responsibility (1). The relationship of home duties to responsibility was studied by a questionnaire entitled "What Are My Jobs," and completed by all children in our sample, somewhat more than 3000 from rural, small town, and urban settings. The "Jobs" questionnaire consisted of three major groupings of items. A number of questions related to the child's income, whether as allowance or in return for duties, and its sources and its distribution by

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[1] The studies to be reported in this and other articles have been carried on by the Laboratory for Research in Social Relations at the University of Minnesota under grants from the Graduate School; the College of Science, Literature, and the Arts; and from the Carnegie Corporation.

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the child. There were also some questions pertaining to the child's future educational and work plans. A second part contained twenty items relating to personal habits and skills and included such items as:

Do your parents generally have to remind you to brush your teeth?
Do your parents generally have to remind you to wash your hands and face?
Have you ever been on the school patrol?
Have you ever held an office in a school club?
Do you have your own house key?

These items generally reflect maturity and independence of self-management. The final section consisted of 100 specific duties, including 17 that would be found only in a rural environment. The child was asked to mark whether he did the job "frequently," "sometimes," or "never" and for the jobs which he frequently or sometimes did whether he liked or disliked them.

The two attitude measures described earlier constituted our criterion of responsibility. These measures are only slightly intercorrelated; for our

TABLE I

CORRELATION BETWEEN NUMBER OF JOBS IN LIST OF 100 REPORTED AS "NEVER" DONE, AND SCORE ON TWO MEASURES OF RESPONSIBILITY

	N	*Teacher Check List*	*"How I feel about Citizenship"*
10-year-olds:			
Rural girls	127	.02	—.18
Town girls	64	.26	—.09
Urban girls	51	.00	.00
Rural boys	142	.11	—.01
Town boys	62	.22	—.02
Urban boys	53	.04	.28
15-year-olds:			
Rural girls	61	—.20	—.06
Town girls	66	.27	.19
Urban girls	79	.12	.15
Rural boys	63	—.06	—.13
Town boys	46	—.06	.01
Urban boys	51	—.18	—.22
Total rural and town sample	2441		
Non farm items only		.09	—.07
Total "never" count		—.01	—.07

entire population of town and rural children ($N = 2441$), the Pearson r was $+.27$, though there was a tendency for r values to be higher for older than for younger children when correlations were computed in different age groups (3).

The relationship to home duties may be expressed in a crude manner by simply counting the number of jobs a child says he "never" does and correlating this "score" with his scores on the criterion measures. This procedure investigates the hypothesis that more responsible children will have smaller "never" counts on the job questionnaire. Results of such an analysis appear in Table 1 for several selected age and sex groups and for the total rural and small town population. Results certainly cannot be used to support the hypothesis that the number of home duties assumed by a child bears a substantial relation to his sense of responsibility, at least as measured in this study. Nor is there any evidence that this relationship may exist in older children, after more years of family training.

The relationship of home experiences to responsibility was further investigated by an item analysis of the home duties questionnaire, on the supposition that the very crude measure used in the correlational study might obscure certain more specific relationships. Criterion groups were constituted by selecting individuals from deviate quarters of the score distributions for both criterion measures, using the correlation scattergrams between both measures. These groups were so drawn that the fourth of the children highest on both measures together and the fourth lowest on both measures together were utilized. It is obvious, of course, that the selection was based on an inspection of correlation scattergrams which did not show a great coincidence of the regression lines. These samples were selected with cognizance of the fact that a sex difference exists between boys and girls on both measures of responsibility, particularly on the teacher's rating. The samples were adjusted to equalize the sex representation on the selected deviate groups. Significance of differences between proportions of each group responding to each item were calculated.

Again the results are negative. Results were kept separate for boys and girls. For boys, five tasks differentiated between most and least responsible at the five per cent level of significance in terms of doing the task or not. Fourteen items differentiated on the basis of whether those reporting the item stated they liked to do it. Generally, the more responsible boys more often liked to do the work, though they were not actually more likely to do the task. For girls, eight items differentiated high and low responsibility subjects as to performance but only six items on a liking basis. These items are listed in Tables 2 and 3. Actually, the *number* of "significant" differences reported in the tables itself falls within chance expectation.

While no differences were found between most and least responsible children with regard to source or expenditure of personal income, responsible children, both boys and girls, more frequently stated they planned

TABLE 2

ITEMS WHICH DIFFERENTIATE SIGNIFICANTLY (5 PER CENT LEVEL) BETWEEN RESPONSIBLE AND LESS RESPONSIBLE CHILDREN IN TERMS OF REPORTED PARTICIPATION

Item	*Critical Response*	*Group Showing Greater Percentage*	*Sex*
Sweep floor	Sometimes	Low Responsibility	B
Keep own room neat	Regularly Sometimes	High Responsibility Low Responsibility	B&G
Empty garbage	Regularly	High Responsibility	B
Keep records or accounts for family	Never	High Responsibility	B&G
Fill root cellar	Sometimes Never	Low Responsibility High Responsibility	B
Bathe baby	Never	High Responsibility	G
Change diapers	Never	High Responsibility	G
Help select furniture or furnishings	Sometimes	High Responsibility	G
Dry dishes	Regularly Sometimes	High Responsibility Low Responsibility	G
Help with preserving food	Sometimes	High Responsibility	G
Prepare food for cooking	Regularly	High Responsibility	G

to get education beyond high school. To each of the questions "Do your parents generally have to remind you to brush your teeth, wash your hands and face, change to clean clothes, or comb your hair," significantly more of the high responsibility children, both boys and girls, responded "no." Among the rural boys more high responsibility boys had driven a tractor in the fields. High responsibility girls responded more frequently with "yes" to the questions "Have you ever held an office in your school class," and "Have you ever worked on a committee?"

While these items could be viewed as expressions of special experience which has served to inculcate a sense of responsibility, they can also be viewed merely as expressions of the validity of the criterion in this instance. Children with a well-defined sense of responsibility probably do require less reminding by their parents, probably *are* more frequently selected for school offices, because of their more dependable behavior! Thus, this analysis affords little help in isolating the kinds of training which can be given to insure or to increase a responsible attitude in children. Certainly, there is little evidence that the routine tasks, such as washing dishes, caring for pets, house cleaning, preparation of food, repairing about the house, are associated with an attitude of responsibility.

TABLE 3

ITEMS WHICH DIFFERENTIATE SIGNIFICANTLY (5 PER CENT LEVEL) BETWEEN RESPONSIBLE AND LESS RESPONSIBLE CHILDREN IN TERMS OF REPORTED LIKING OR DISLIKING TO DO THEM

Item	*Critical Response*	*Group Showing Greater Percentage*	*Sex*
Plan games for family	Don't like	Low Responsibility	B
Plan family outings or picnics	Don't like	Low Responsibility	B
Pay bills for family	Don't like	Low Responsibility	B
Keep money records for family	Don't like	Low Responsibility	B
Help select furniture or furnishings	Like	High Responsibility	B&G
Build simple furniture or furnishings	Like	High Responsibility	B
Sweep	Like	High Responsibility	B
Clean own room	Like	High Responsibility	B
Keep room neat	Like	High Responsibility	B&G
Prepare food for cooking	Like	High Responsibility	B
Make outside repairs to roof, siding, doors, etc.	Don't like	Low Responsibility	B
Help paint garage, house, or farm buildings	Don't like	Low Responsibility	B
Repair or paint toys	Like	High Responsibility	B
Plant and care for flowers, shrubs	Don't like	Low Responsibility	B
Dry dishes	Like	High Responsibility	G
Groom work animals	Like	Low Responsibility	G
Shovel snow	Like	High Responsibility	G
Rake yard	Like	High Responsibility	G
Read to younger brother and sister	Don't like	Low Responsibility	B

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RESPONSES OF PRESCHOOL CHILDREN TO THE CHILDREN'S APPERCEPTION TEST

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The purpose of this study is to investigate the manner and extent to which certain behavioral dynamics of personality development are revealed in the responses of preschool children to the pictures of the Children's Apperception Test, hereafter referred to as the CAT. The CAT, a picture-story projective technique devised by Bellak and Bellak (2, 3), consists of a series of ten achromatic drawings depicting animals in various situations. The authors of the CAT report the following:

> It is to be used with children of both sexes primarily between the ages of three and ten for maximal usefulness. . . .
>
> The CAT was designed to facilitate understanding of a child's relationship to his most important figures and drives. The pictures were designed with the hope of eliciting responses to: feeding problems specifically, and oral problems generally; to problems of sibling rivalry; to illuminate the attitude toward parental figures and the way in which these figures are apperceived; to learn about the child's relationship to the parents as a couple —technically spoken of as the oedipal complex and, its culmination in the primal scene: namely, the child's fantasies about seeing the parents in bed together. Related to this, we wish to elicit the child's fantasies around aggression: acceptance by the adult world, and its fear of being lonely at night with a possible relation to masturbation, toilet behavior and the parents' response to it. We wish to learn about the child's structure and his dynamic method of reaction to—and handling of—its problems of growth (2, p. 1 ff).

The CAT was released on the basis of 200 records of children between the ages of three and ten. The size and nature of that portion of the sample under six and one-half years was not reported. Unpublished studies and research in progress on the CAT have been reported by Holt (7). No studies of the CAT at the preschool level have been reported. Studies (1, 4) using pictures as a projective technique with preschool children have been more concerned with methodological problems and formal aspects of the responses than with the dynamics of personality development. The CAT has been offered as a means of exploring these dynamics by the picture-story projective method.

On the basis of the statements made by the authors of the CAT and the limited research reported, especially at the preschool age level, the need for further investigation is apparent. This study attempts to fulfill part of this need by determining the face validity of the CAT at lower age levels.

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In particular, this study is concerned with (*a*) the extent to which preschool children give apperceptive responses to pictures of the CAT, and (*b*) the extent to which these responses reveal those dynamics of inner life which the pictures were designed to explore. The data of this study should also serve the additional need of normative data necessary for the interpretation of a projective method. As a result of this inquiry, it is hoped that something will be added to the understanding of the picture-story method of studying personality development, particularly its application during the early formative years.

METHOD

Subjects. The subjects for this study included 38 boys and 42 girls ranging in age from two years eight months to six years five months. All were enrolled in the two kindergartens and the nursery school of Florida State University. Intelligence level, socio-economic status, and health of this group are above average when compared to the general population.

Administration of the CAT. The CAT was administered individually by the senior author and/or the child's teacher in quiet, familiar surroundings. No coercion was used to elicit responses and each child was free to terminate the session as he felt a need to do so. The pictures were presented as a game in which the child was to tell a story about each picture. Failing to tell a story the child was asked, "What is happening? What are the animals doing?" When appropriate he was asked, "What happened before?" and, "What will happen next?" Encouragement was given freely but care was taken not to be suggestive. All questions and responses were recorded verbatim by the examiner in an abbreviated longhand. Side remarks and significant activity were noted. Occasionally a child was not understood; on these occasions he was asked to repeat what he had said. Recording of responses was complete for over 95 per cent of the cases.

Analysis of Data. For purposes of analysis, everything a child said in responding to a single picture was considered a response. Every response was analyzed independently of the child's other responses and again in its relation to the total protocol. The first analysis was primarily stimulus oriented and provides a means for tabulating norms. The second analysis in protocol context was subject oriented and provides a measure of the child's needs and dynamisms.

In order to determine the extent to which the CAT elicited apperceptive responses, each response was classified and tabulated as *enumerative, descriptive,* or *apperceptive.* A response was considered enumerative if it did no more than name one or more objects in the picture. It made no difference whether the object was named correctly or not if it was obvious to what was being referred. Examples of enumerative responses were: "Little chicks." (Picture 1); "There's a crib. This house. Look at the bed." (Picture 5).

Responses were classified as descriptive if they did no more than describe the objective features of the picture. Examples of descriptive responses were: "It's a lion. Looks like he was smoking a pipe. There's a mouse. Has a walking cane too. The mouse is looking at him." (Picture 3); "A rabbit in bed. He's awake. The door's open." (Picture 9).

Responses that indicated interpretation beyond the objective features of the picture were classified as apperceptive. These were the responses that revealed the psychological dynamics operating at that particular time enabling the child to meaningfully interpret the stimulus and reveal certain aspects of his private world. Apperceptive responses were further classified and tabulated according to the dynamic forces they revealed. For purposes of this study these dynamics were limited to those suggested by Bellak and Bellak (2) as being typical to the specific pictures. Apperceptive responses that did not fit any of the categories were classified as "other." A response that contained enumeration and/or description but also included apperceptive elements was classified as apperceptive. The introduction of objects or places was also considered as apperceptive material. Examples of apperceptive responses were: "They're going to pull that bear up. She'll slip and he's going to fall down. And all of 'em will fall down." (Picture 2); "A bed and some bears. A little teeny bed. A lamp. They are fightin'. Mama will spank 'em 'cause they've been bad." (Picture 5). In all analyses an effort was made to stay close to actual wording and attitudes expressed rather than use diagnostic or symbolic interpretation.

RESULTS

In general the stories were brief and often lacked plots and formal aspects of causation and outcome that are found in older children's stories. There was a marked lack of spontaneity and much questioning was needed by the examiner to obtain responses. In spite of specific questions such as, "What have the animals been doing?" and, "What is going to happen next?" enumerative and descriptive responses persisted. Table 1 shows the number and distribution of enumerative, descriptive, and apperceptive responses for each picture. One hundred and fifty-nine (20 per cent) of the 800 responses were classified as enumerative and descriptive. The pictures appear to be relatively equivalent in their ability to elicit apperceptive responses with the possible exception of the first picture which is slightly lower than the others.

When the apperceptive responses were examined for the types of dynamics they contained, it was found that they highly agreed with the area or areas each picture was designed to investigate. In addition, certain dynamics continued to appear in responses to pictures not specifically designed to explore these dynamics. Frequencies of the dynamics for each picture and the total frequency of each dynamic are presented in Table 2.

TABLE 1

FREQUENCIES OF ENUMERATIVE, DESCRIPTIVE, AND APPERCEPTIVE RESPONSES OF 80 PRESCHOOL CHILDREN TO PICTURES OF THE CAT

	PICTURE NUMBER											
Response	1	2	3	4	5	6	7	8	9	10	*Total*	*Per Cent of Total*
Enumerative	3	2	3	..	4	1	1	..	3	1	18	2
Descriptive	32	17	15	21	7	21	4	2	15	7	141	18
Apperceptive	45	61	62	59	69	58	75	78	62	72	641	80
Total	80	80	80	80	80	80	80	80	80	80	800	100

TABLE 2

FREQUENCIES OF THE DYNAMICS REVEALED IN THE APPERCEPTIVE RESPONSES OF 80 PRESCHOOL CHILDREN

	PICTURE NUMBERS											
Dynamic	1	2	3	4	5	6	7	8	9	10	*Total*	*Per Cent of Total*
Orality	21	3	11	31	4	21	2	7	14	1	115	10.2
Sibling Rivalry	2	..	..	10	2	..	..	..	..	..	14	1.2
Aggression	3	37	17	5	3	8	68	3	3	3	150	13.3
Fear	..	..	1	4	10	6	..	1	9	..	31	2.8
Toileting	..	..	..	..	..	..	..	..	..	14		
(Cleanliness)	2	..	..	..	..	..	..	..	..	16	32	2.8
Sexuality	..	..	..	4	5	..	..	..	1	..	10	.9
Identification with Mother	17	33	2	65	37	60	5	36	13	56	315	28.0
Identification with Father	2	34	4	9	31	57	4	53	6	14	194	17.3
Acceptance by Adults	1	..	41	..	1	6	1	4	1	42	97	8.6
Oedipal Situation	..	..	..	..	35	5	..	..	..	..	40	3.6
Other	20	8	14	12	9	15	4	13	23	9	127	11.4
Total	63	115	90	140	137	176	65	87	70	155	1125*	100

* Total exceeds 641 (see Table 1) because a response may contain more than one dynamic.

A brief summary of findings for each dynamic, with examples, are presented herewith.

Orality. Themes of orality usually centered around eating, about not getting enough to eat, hunting food, or getting sick.

> Picture 1. "That's the table and they're eating and there's the hen and she says she's going to eat up that (points to bowl) and they all don't have anything to eat and she'll cook some more and she eats it and don't let them have any."
>
> Picture 7. "A tiger's trying to get that monkey. He's going to eat him up. Then he'll go hunt for something else to eat."

According to Bellak and Bellak (2), themes of orality are typical responses to Pictures 1, 4, and 8. In this study, orality occurred in the responses to all the pictures. It is highest in responses to Pictures 1, 4, and 6 and relatively high in 3 and 9. The total frequency for these themes was high.

Sibling rivalry. Sixty-one children having one or more siblings furnished the data for this category. Sibling rivalry was considered more broadly in terms of sibling relationships and included aggression between siblings.

> Picture 4. "I think they're going on a picnic. He has to stay in the pocket but he doesn't. . . . (Why?) 'Cause he can't walk."
>
> Picture 10. "And mama dog's spanking the baby dog. (Why?) Maybe another puppy and he hit him. (Who?) His brother."

Pictures 1 and 4 were designed to investigate this area. In Picture 4 the child was asked to identify the roles of the animals if he failed to do so spontaneously. A total of 12 themes of sibling rivalry were obtained to these pictures and two to Picture 5. The total frequency of this dynamic was very low.

Aggression. Classification of aggressiveness was limited to those responses in which aggression was explicitly stated.

> Picture 2. "Teddy bears fightin'."
>
> Picture 6. "The dynamite is going to explode and blow the whole rocks up. (Then what?) They're dead and can't get up anymore."

Themes of aggression are reported by the authors to be typical in responses to Pictures 2, 3, and 7. Similarly the highest frequencies for aggression in this study occurred in the responses to these pictures but this dynamic occurred in responses to all other pictures. The total frequency of 150 aggressive responses was high.

Fear. The presence of fear was indicated by the child expressing a general or specific fear for/of one of the animals.

> Picture 7. "I'm scared of this one. There's a monkey and there's a tiger. Oooh!! (puts hands and arms around head) He's going to eat up the monkey!"
>
> Picture 9. "Hall's lighted up. The room's dark. He's sitting up in bed because he's scared of the dark. The mother and daddy are doing things out in the hall."

The authors of the CAT suggest that themes of flight can be related to unconscious sexual fears. Two such themes were given in responses to

Picture 4. Fear of the dark and fear of being left alone are reported to be "typical" responses to Picture 9. Nine themes of fear were found in the responses to this picture. Picture 5 elicited as many themes of fear as Picture 9; both are scenes of a darkened room. Fear also occurred, in low frequencies, in responses to Pictures 3, 4, 6, and 8. The total frequency of 31 fear responses was relatively low.

Toileting. Responses classified in this category were concerned with toileting or with cleanliness. The dynamic relationship between these two types of behavior was recognized but because they were obviously separate in the responses they were tabulated separately.

> Picture 10. "I know what he did. He wee weed on the towel. I'd like to be that one best (points to puppy)."
>
> Picture 10. "The baby dog's been playing outside and got dirty and has to come in and get a bath. (Do next?) Going to go outside and not get dirty. Mother said they're going to the store and not get dirty."

Picture 10, designed to explore these dynamics, elicited 14 themes regarding toileting and 16 themes concerned with washing or bathing. The only other picture to elicit one of these themes was Picture 1; two responses were concerned with washing before eating. The total frequencies of toileting and cleanliness themes were relatively low.

Sexuality. There were no responses dealing with manifest sex behavior. Sexuality was interpreted as existing in the types of responses given here as examples. Concern with origin of babies was included in this category.

> Picture 4. "The babies have one of those things on so that when they grow up they can have a baby."
>
> Picture 5. ". . . then one wakes up and jumps on the other one 'cause he thinks he's naughty."

This dynamic appeared less frequently than any of the other dynamics investigated. A total of ten themes of sexuality occurred in responses to Pictures 4, 5, and 9. Themes of sexuality are reported to be "typical" responses to these pictures and to Picture 6. Sexuality was absent in the responses of the preschool children to Picture 6.

Identification with Mother. Any mention of the mother in the child's response was considered significant and classified as an identification with the mother. In Pictures 2, 4, 8, and 10 the child was asked to identify the roles of the animals if he failed to do so spontaneously.

> Picture 5. "Where's the mama and the daddy? (turns card over) Aren't they over on this side?"
>
> Picture 9. "A little mother laying down in bed for the night."

Maternal identification occurred more frequently than any other dynamic. All pictures were capable of eliciting this kind of response. Maternal identification exceeded paternal identification in responses to all pictures except 3 and 8. The highest frequencies occurred in responses to Pictures 4, 6, and 10. Only in Picture 4 was the animal purposefully drawn to represent the mother. Picture 6 depicts two large bears and in Picture 10 no clue is given to identify the sex of the large dog. Twelve boys and 21 girls identified with the mother on Picture 2.

Identification with Father. Any mention of the father in a child's response was considered significant and classified as an identification with the father.

> Picture 3. ". . . then daddy will call some of his giants."
> Picture 2. "I think daddy bear will get it."

Paternal identification ranked second with a total frequency of 194. All pictures were able to elicit this dynamic. The low frequency for Picture 3, which was specifically designed to test this area, was obtained because the child was not asked to identify the role of the lion. Only four children made this identification spontaneously.

In an attempt to measure the reliability of children's identification with a parent figure, as indicated by their choice of parent with the small bear in Picture 2 (Revised Edition), a retest was made. Picture 2 was presented a second time, after an interval of two to four weeks, to a random sample of 36 of the children. This picture depicts one adult bear pulling on one end of a rope and a similar bear pulling on the other end assisted by a small bear. The child is thus forced to identify with one of the parents if he names them as such. Fifty per cent of the children repeated their initial choices and identified with the same parent while the other 50 per cent changed their identification to the other parent.

Acceptance by Adults. Acceptance by an adult was evidenced in a response by the child's concept of the adult figure as admonishing or inhibiting, whether he saw himself rejected, or felt a need to "run away."

> Picture 6. (What will baby bear do?) "Sneak away. (Why?) 'Cause maybe he doesn't like his mom or pop. I guess he just wants to. . . . If they find him they'll switch him. Just what I feel like doing sometimes. One time mama spanked me and I didn't do anything."
>
> Picture 10. "The mother's spanking the little puppy. (Do?) Run away again so his mother won't know where he is."

The pictures designed to explore this area are 3, 9, and 10. Frequencies of this dynamic in the responses to these pictures were 41, 1, and 42 respectively. Low frequencies also occurred in responses to Pictures 1, 5, 6, 7, and 8. The total frequency of 97 of this dynamic was average.

Oedipal Situation. Oedipal dynamics were revealed by the child's concern about his parent's as a couple, particularly as they were seen in bed.

> Picture 5. "There are two babies in the crib. The papa and mama are all snug in here."
>
> Picture 6. "There's the mother bear. . . . Why he didn't get in bed with mother and father? I think it's night."

Pictures 5 and 6 were designed to investigate this relationship. Thirty-five responses to Picture 5 and five responses to Picture 6 were classified in this category. No other pictures elicited responses that indicated the child's concept of the oedipal relationship. The total frequency of 40 for this dynamic was average if one confines the meaning of oedipal relations.

Frequency and Intensity of the Dynamics in the Protocols. When the protocols were examined for the intensities of the dynamics they contained, it was found that parental identification, aggression, and orality occurred in over 75 per cent of the protocols. Sibling rivalry and oedipal dynamics appeared in approximately 50 per cent and themes of fears, toileting, and sexuality occurred in less than 25 per cent of the protocols. In two-thirds of the protocols, the dynamics that appeared were considered to be of mild intensity and less than eight per cent of the protocols contained dynamics of severe intensity. Orality and aggression showed greater tendencies to occur with stronger intensities than the other dynamics.

Discussion

Brevity, enumeration, and simple description in the normal preschool child's responses to the CAT pictures should indicate the limitations of formal and complex methods of picture-story analysis at this age level. Methods for obtaining fuller and richer responses need further investigation.

The frequency of a dynamic will be determined by the strength of the dynamic in each child and the nature of the picture used to elicit the dynamic. In order to obtain an accurate measure of the stimulus value of a picture the strength of the child's need should be known. Conversely, if we have a measure of the need-evoking power of a picture we should be able to obtain a measure of the child's needs.

In the design of the CAT pictures certain dynamics were assumed to be operative in the child's personality, therefore if the frequency of a dynamic was high it would indicate that (*a*) the dynamic is operating and (*b*) the specific picture is a valid means of measuring the dynamic. Dynamics of high frequency would indicate the more significant drives at this age level. Responses that contained a dynamic not objectively related to the picture (i.e., introduced) would indicate additional strength of the dynamic as a behavioral determinent. However, if the frequency of a dynamic was low it would indicate that either the dynamic was not a significant force in the child's personality or that the picture was not a valid means of eliciting this particular dynamic on a manifest level. In this study neither the strength of the dynamic in the child nor the stimulus value of the pictures were known, thus little more can be said than the fact that a frequency was low. Sibling rivalry, fears, and sexuality were in the low frequency category.

Themes of the oedipal situation and of toileting and cleanliness occurred with moderate frequency and intensity in responses to the pictures designed to explore these areas but seldom occurred elsewhere. This suggests that projective stimuli for investigating these areas be rather specific for this age level. From the psychoanalytical framework these areas are highly important at this age level since nearly all of the children have just passed through the anal stage and are entering the oedipal phase. Some investigators will no doubt expect more apperceptive material in these areas than was given by the children in this study. However, this study deals with the nature of the manifest content, and an analysis on another level (e.g. psychoanalytic symbolism) would present a different picture.

Themes of orality and aggression were found with relative high frequency and intensity in the responses to the pictures designed to measure these dynamics and with equal frequency in pictures not so specifically designed. Oral needs and aggressive feelings thus appear to play an important role in the normal preschool child's personality development. This finding bears consideration when interpreting the significance of similar findings in the projective material of the preschool age child in the clinical situation.

High frequencies of parental identification can partially be attributed to the fact that seven of the pictures depict adult animals and the child was asked to identify the roles of the animals in five of these if he failed to do so spontaneously. However, many of the responses in this area included elaboration on the relationship to, or personality characteristics of, the parent figure indicating that preschool children easily identify with the figures in the CAT pictures. The type of relationship expressed for both parent figures was more often favorable or benign than admonishing or inhibiting.

Low reliability of parental identification as measured by a retest of Picture 2 would indicate caution in placing significance in a child's single response in which he identifies with one of the parent figures. At least the total protocol should be examined for additional evidence before final interpretation is made.

Pictures 3 and 10 were found to be valid means of obtaining the child's concept of how he is accepted by adults. Since Picture 3 depicts an obvious male figure and the adult dog in Picture 10 was predominantly identified as a mother figure the child's concept of acceptance by both sexes may be explored by the CAT.

The data of this study are offered as a beginning attempt to establish norms for the CAT at the preschool age levels. The importance of normative data for projective methods, early recognized by the Rorschach investigators, has recently begun to receive attention in the picture-story method (5, 6). Before a response can be classified as unique we must first determine what is common. Apperceptive norms help define the degree of a subject's participation in group modes of behavior. Deviations from norms are a measure of individuality.

The collection of normative data is only one of the first steps toward validation of the CAT or of any projective method. There is also a need for further breakdown at the various age levels. The normative approach must be supplemented by deeper analysis of individual protocols along with case history material. Longitudinal studies are needed to explore the developmental characteristics of CAT responses and the dynamics revealed by them. The writers are presently engaged in annual administration of the CAT to as many of the 80 children used in this study as are available in an attempt to study personality development as it is revealed in these early formative years.

SUMMARY

The Children's Apperception Test (CAT) was given to 80 preschool children to determine the extent to which this test elicits responses that reveal certain behavioral dynamics of personality development. Eighty per cent of the children's responses were classified as apperceptive. When judged by frequency and intensity, the dynamics of parental relationship, aggression and orality appear to be more important and more adequately explored by the CAT at this age level than sibling rivalry, fears, and sexuality. Toileting cleanliness, and oedipal dynamics were found to occur only when the stimulus picture was specifically designed to explore these areas. This study presents normative data which should prove helpful in future application and research with the CAT. Areas for additional research are suggested.

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COMPANION CHOICE BEHAVIOR IN THE KINDERGARTEN

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THE PROBLEM

The purpose of this study was to determine whether or not the sociometric choices of kindergarten children correspond with preferences manifested in actual play associations; and to study the stability of these two types of choice over a period of time.

Experimental evidence relating to the sociometric choices of preschool children is incomplete. Budden (3) analyzed verbal choices by preschool children solely in terms of choice consistency, and made no attempt to compare sociometric responses with actual behavior preferences. F. Moreno (13) used an exclusion technique, in which the favorite companion of a particular child (as determined by observation) was removed from the playground. The behavior of the remaining member of the pair was then observed to determine his secondary preferences. No attempt was made to elicit verbally expressed preferences in this study. Hagman (8) featured a modified verbal choice technique in which the child was encouraged to pick celluloid fish out of a bowl to be given to his friends. These choice data were then compared with time sampling data of actual behavior preferences. No clear-cut relationships appeared between the two types of data. However, Hagman took time samples over a period of several months, and there is the possibility that the playmate preferences of the children in her study might have changed several times during that period. Thus, the time sampling data yielded information as to long-time trends, while the sociometric choices might have reflected at-the-moment preferences. Koch (10) and Lippitt (11) obtained sociometric choices by using the paired comparisons technique, and they compared these choices with observational data as to actual preferences. However, the tendency of the children in these studies to choose the last name in each pair reduced the consistency between reversed similar pairs to as low as 50 per cent, which suggests that the authenticity of the paired comparison choices may be questioned.

Thus, it can be seen that at present, information as to the nature of the sociometric choices of preschool children is lacking. The present investigation was conducted in an attempt to correct the deficiencies of previous studies in this area of social behavior.

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[1] This article is based on a thesis written while the author was at the Institute of Child Welfare, University of Minnesota.

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SUBJECTS

The subjects of this study were the 25 members of the kindergarten of the University of Minnesota, Institute of Child Welfare. The average IQ for the group was 125.6 [Stanford-Binet (1937 Form L), or WISC], with a range of 85 to 151. The socio-economic background of the children, as indicated by the number of fathers at the various levels of the Minnesota Occupational Scale, was as follows: Level I, 19; Level II, 1; Level III, 2; and three University students. All of the children were five years of age during the period covered by the study. There were 14 boys and 11 girls in the group.

PROCEDURE

As a basic step toward determining the nature of sociometric choices it seemed desirable to compare these choices with actual behavior preferences. In order to do this, a simple behavior sampling system and a sociometric picture completion technique were developed.

Behavior Sampling Technique

Most studies of preschool social behavior have used methods of observation in which the behavior of a single individual child during a certain time interval is observed and recorded. The majority of these devices have been variations of the time sampling system developed by Goodenough (5, 6) in which the occurrence of a specific type of behavior within a short interval of time is recorded (7, 9, 10, 14, 15); or the situational analysis technique developed by Thomas (16), in which a complete record of focal behavior in chronological sequence is made during a more extended interval of time (1, 2, 11, 12). However, these techniques have been used, for the most part, in making detailed analyses of relatively complex forms of behavior, e.g., friendships (7), popularity (10, 11), social participation and play (14, 15), social behavior in general (1, 12, 16). By comparison, the behavior which was studied in the present investigation (companionship) is quite simple and clear-cut. As a result, it did not seem practical or necessary to require an observer to make a detailed record for each individual child. In addition, the fact that information as to the companionship behavior of all the children over the same short period of time was desired, would have made it necessary to use several observers if the individual child orientation had been used. For the purposes of the present investigation, the approach used by Chalman (4), in which he simply noted the membership of groups seemed more appropriate and convenient. However, Challman employed a 15 second period of observation and defined a group as "two or more children in close spatial proximity or engaged in the same or parallel activity with each other." The disadvantages of this technique (as noted by Challman) were that children were considered in the same group if they were merely close together, even though they were paying no attention to each other; and that no distinction was made between groups that were engaging in an activity because of a mutual interest in that activity, and those that were composed of children playing together because of more personal interest. In addition, the 15 second observation period complicated the procedure by virtue of the fact that play groups were so ephemeral that they frequently changed in composition during that time. Hagman (8) attempted to improve upon these procedures, using the individual child orientation, by taking the action of the child at the moment first observed as the point of reference, and by determining companionship in relation to an elaborate and carefully defined set of behavior criteria.

In the process of attempting to apply Hagman's system, the writer became convinced that her technique was perhaps too refined for the purposes of the present study. He discovered that by observing the children in the kindergarten he could come to a quick decision (with a definite feeling of confidence) as to which children were playing together at a specific point of time. However, he did not find it possible to relate many of these impressions to any of the formal definitions of companionship developed by Hagman. While the dynamics behind companionship behavior are easily understandable, they are not easily classifiable. It is virtually impossible to evaluate the limitless variations of such behavior in terms of any set of criteria, no matter how complete. Therefore, it seemed desirable to attempt to determine if a more flexible behavior sampling system could be devised. The technique which was developed consisted of recording companion preferences for all of the children in the kindergarten at particular moments during free play periods. In taking the behavior samples, the writer simply observed the group for a few minutes, and then recorded the names of the children he considered to be playing together. At the end of ten minutes he took another such sample. The actual recording process, which consisted of drawing lines from names arranged along either edge of the record blank to descriptions of activities in the center of the page, required only a few seconds. This procedure was felt to combine the advantages of the group approach used by Challman and the behavior-at-the-moment orientation of Hagman, in a simple yet comprehensive technique which seemed especially appropriate to revealing companion preference over a short period of time. Two separate sets of 25 observations made over a period of two weeks were obtained approximately one month apart.

A simple reliability check was made by having the assistant teacher take independent, concurrent samples. Of 171 classifications made, only 21 were disagreements, yielding a percentage of agreement of 87.7. (A disagreement was considered to have occurred if the teacher classified a child as in a different group from that designated by the writer, or if one observer marked a child as playing alone and the other marked him as a member of a group.) Most of the disagreements were due to the tendency of the teacher to classify a child as playing alone unless she was sure that a definite desire for companionship existed. In no case did any of the disagreements change the standing of the two most frequently played with companions for the period of observation (one week).

Picture Completion Technique

The picture completion technique was used in an attempt to elicit sociometric responses of maximum authenticity. The materials used were two series of line drawings of groups of children depicted in various play situations, and photographs of the faces of all the children in the kindergarten presented to the child as "cut-outs." The line figures were drawn without heads, and were to be completed by selected cut-out faces. In an individual interview situation, the photographed faces were spread out on a table and the child was asked to name each one (to make him aware of all his classmates). Then, a series of three drawings was presented. The first had five figures, the second three, and the final picture had only two. The child was asked to place his own face on one of the figures in the first picture, and then to complete it by choosing the faces of his four favorite playmates. This same procedure was followed for the three-figure picture, with the provision that the two companions be picked from those chosen for the first picture. For the final drawing, the child was required to choose between these two. The companion selected for the final picture was considered to be the first sociometric choice. Two different sets of pictures were presented in this way immediately after the completion of each of the time sampling sessions.

Results

First Session

On the first presentation of pictures, 18 (72 per cent) of the sociometric and behavioral first choices were the same. In two cases, the first behavior choice appeared as the second on the sociometric test. The choice discrepancies of two of the remaining five cases were explainable by simple circumstances, e.g., a sudden quarrel just before the picture session, the absence due to sickness of a favorite companion during most of the behavior sampling period. The other three children played alone most of the time, which prevented any behavior choice differentiation, since they were observed in the company of their favorite companions only four or five times.

Second Session

On the second presentation, (approximately one month after the first) 19 (76 per cent) of the children showed perfect agreement of first choices, and in three cases the first behavior choice appeared as the second sociometric choice. Again, the three discrepant cases were explainable by special circumstances.

Relationships Between the Two Sessions

Nine children maintained complete loyalty to one special companion on all four choice situations. Six of these children were members of reciprocal pairs, and the three remaining children were prevented from coming under the reciprocal category because they were one-choice deviates on one of the sociometric situations. Five additional pairs of children completely changed their allegiance from one child to another. That is, their behavior and picture choices were identical for each of the two separate sessions, but not between the two. For the group as a whole the picture choices were somewhat more stable than the behavior choices from session to session. Fourteen first picture choices were the same on both occasions, while eleven of the behavior choices remained constant.

Discussion

An analysis of the finer preference levels (second, third, and fourth choices) revealed no clear-cut trends. There was some agreement between choices, but not to the extent of first choice agreement. The outstanding characteristic was the degree of individual variation in choice behavior. These data seemed to indicate that there was a highly variable social atmosphere in the group studied, in which playmate preferences changed rapidly. Each child seemed to have a fairly definite desire to play with a single favorite companion. There was also some tendency for cliques to form from which secondary choices were made. However, there did not appear to be any clear-cut and consistent hierarchy of choice within these cliques beyond the first, and occasionally the second, choice levels. Thus, for the kindergarten studied, it could be said that each child maintained a fairly consistent and permanent desire to play with a certain specific companion and was successful in satisfying this desire quite frequently in play situations, but that secondary playmate preferences depended for the most part on the situation at the moment. The child adjusted to each specific situation by selecting the most readily available and acceptable playmate from a rather extensive pool consisting of the majority of the members of the kindergarten.

Summary

An attempt was made to determine if "sociometric" responses of preschool children correspond with actual behavior choices, and to discover the relative stability of the two types of choice. Behavior preferences were obtained by using a behavior sampling technique. These data were then compared with sociometric responses elicited by having the child place photographs of the faces of his classmates on headless figures depicted in line drawings. Two sets of data were obtained one month apart. The results indicated high agreement between behavioral and sociometric first choices for each of the two separate sessions. This agreement was high

enough to permit one type of choice to be used as an index of the other. There was some change of allegiance in choice between sessions, however. Lack of agreement between finer choice levels suggests that a child may have one or two very good friends, but that he will choose any of several less liked companions when his favorite playmate is not available.

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CONTRASTS IN BOYS' AND GIRLS' JUDGMENTS IN PERSONALITY

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As a dynamic entity, the personality of the child is in a constant process of development. Realizing this, psychologists and research workers are continuously studying methods best calculated to measure the child's personality and the procedures for a wholesome development thereof, particularly during the early, more formative years of the child's growth (1, 3, 5, 11, 14).

Though some maintain the framework of the young child's personality to be fairly well structured by the time he enters school, others argue for its pliancy during the years of his elementary and junior high school life (6, 7, 16, 17, 21). The social environment of the school is an influence not to be ignored in the study of the child personality.

Graves (15) stresses the inter-relation of the child's environment and nature in the development of his personality. In her experiment, Stiles (20) found that changes in the child's approach to behavior and in his understanding of that behavior can be made on the elementary school level. Ausubel, et al., (9), deplores the large gaps that remain in our knowledge of the developing social perceptions of children. McGuire and Clark (18) consider the concomitants of peer acceptance to be significant in various aspects of personality formation.

Procedure

The present experiment seeks to secure a picture of the child personality as viewed through the eyes of children. Boys and girls do have ideas and do make judgments, but from a child's frame of reference, which is not always identical with the adult frame of reference. This is a point frequently overlooked by educators.

For this investigation of sex and grade-level differences, boys and girls of grades four through eight were asked to rate their classmates on twenty-two personality traits (2, 4, 12). This resulted in some 500 ratings for each of grades four, five, and six; 300 for grade seven; and, 200 for grade eight.

Each child's ratings were averaged separately by sex. From these averages, means were computed separately by grade level and by sex. The results are obvious in the graphs portrayed in Figures 1 to 4 inclusive.

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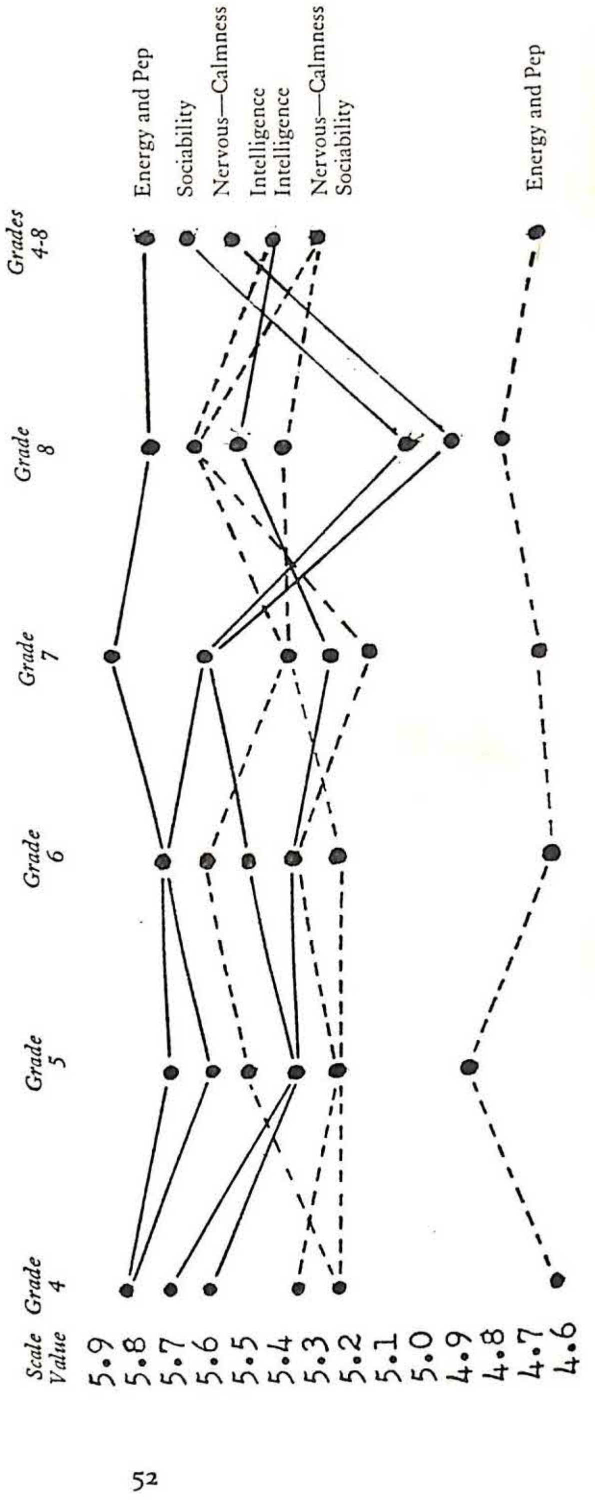
FIGURE 1—Mean ratings of peers as given by boys



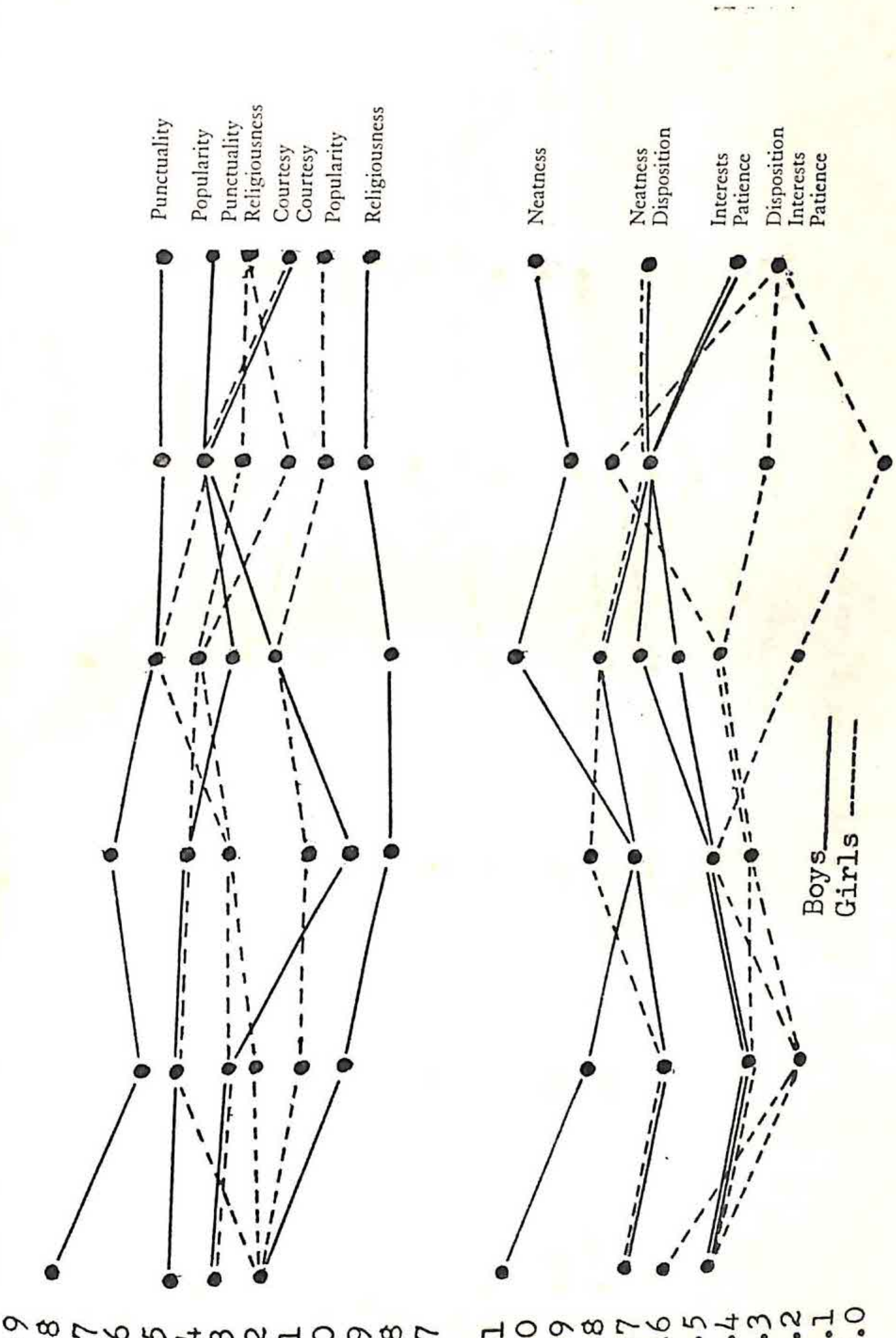
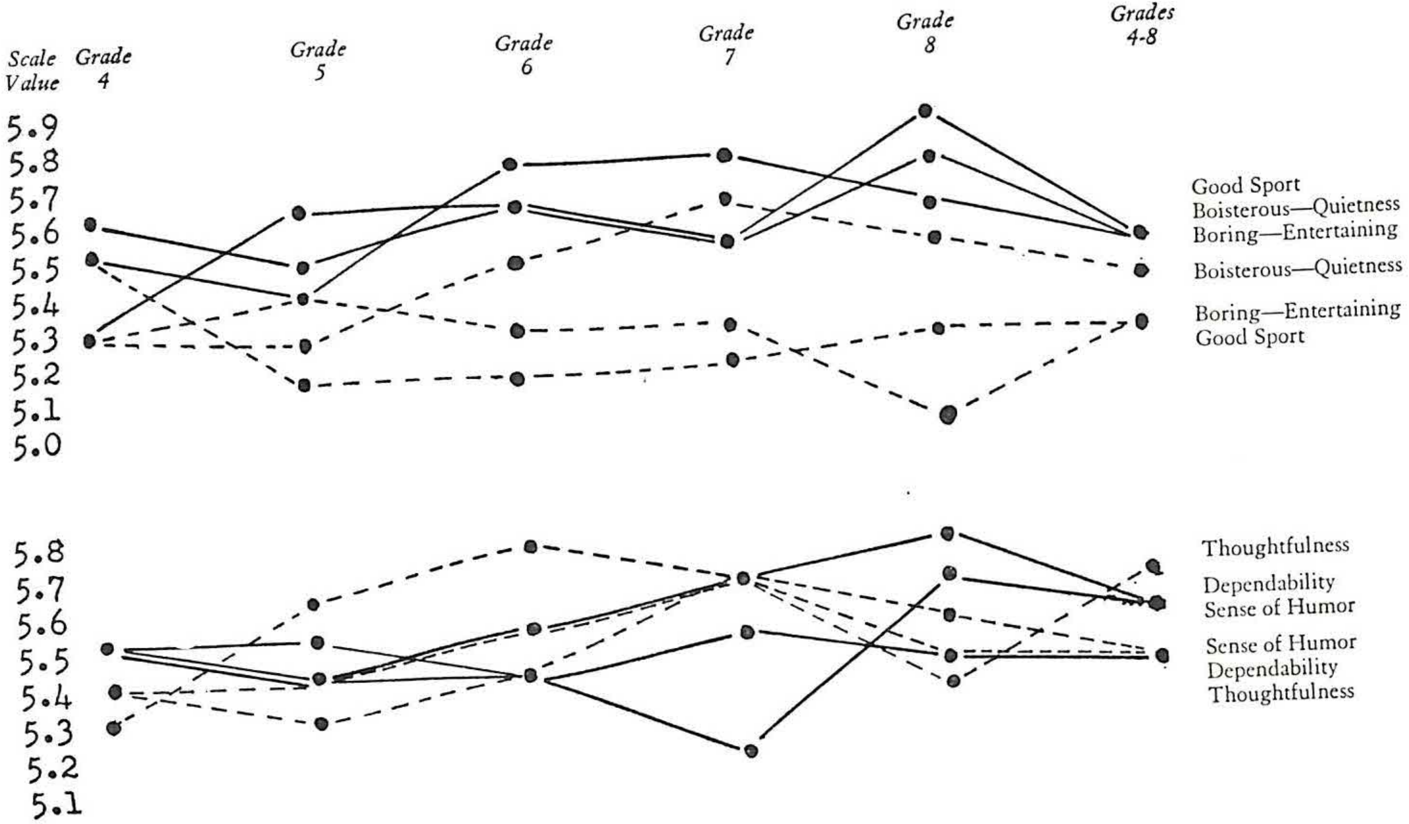

Punctuality
Popularity
Punctuality
Religiousness
Courtesy
Courtesy
Popularity
Religiousness
Neatness
Neatness
Disposition
Interests
Patience
Disposition
Interests
Patience
Boys
Girls
5.9
5.8
5.7
5.6
5.5
5.4
5.3
5.2
5.1
5.0
4.9
4.8
4.7
6.1
6.0
5.9
5.8
5.7
5.6
5.5
5.4
5.3
5.2
5.1
5.0

FIGURE 2—Mean rating of peers as given by boys



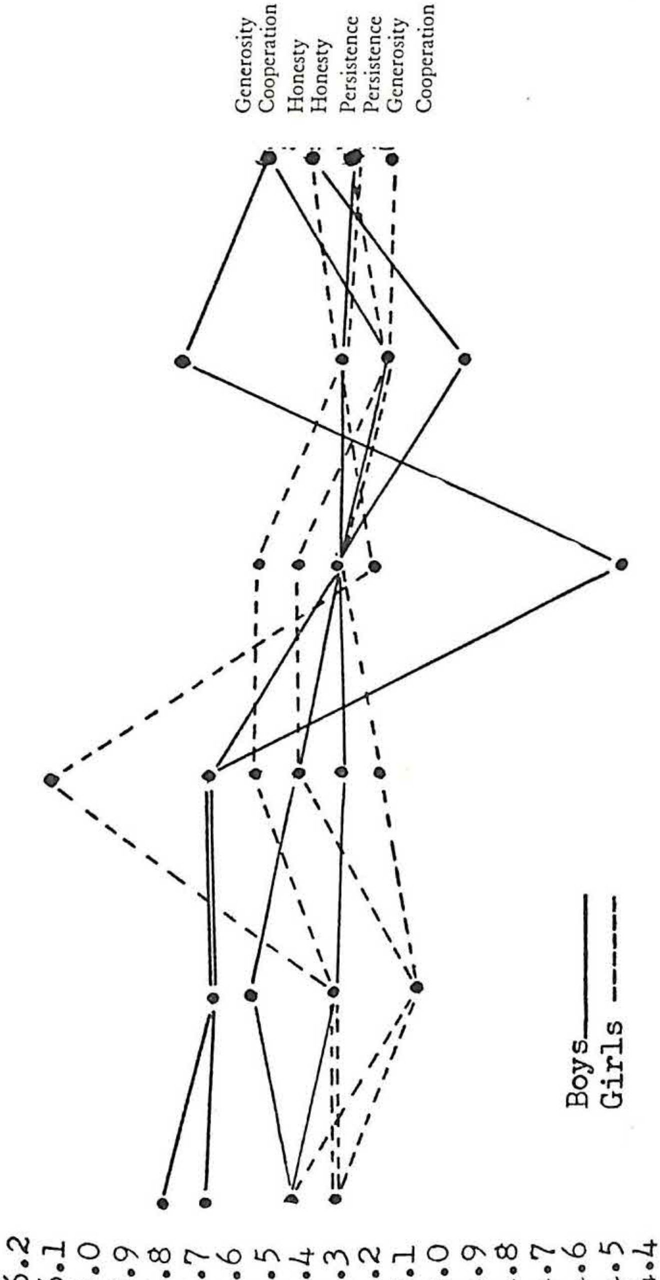
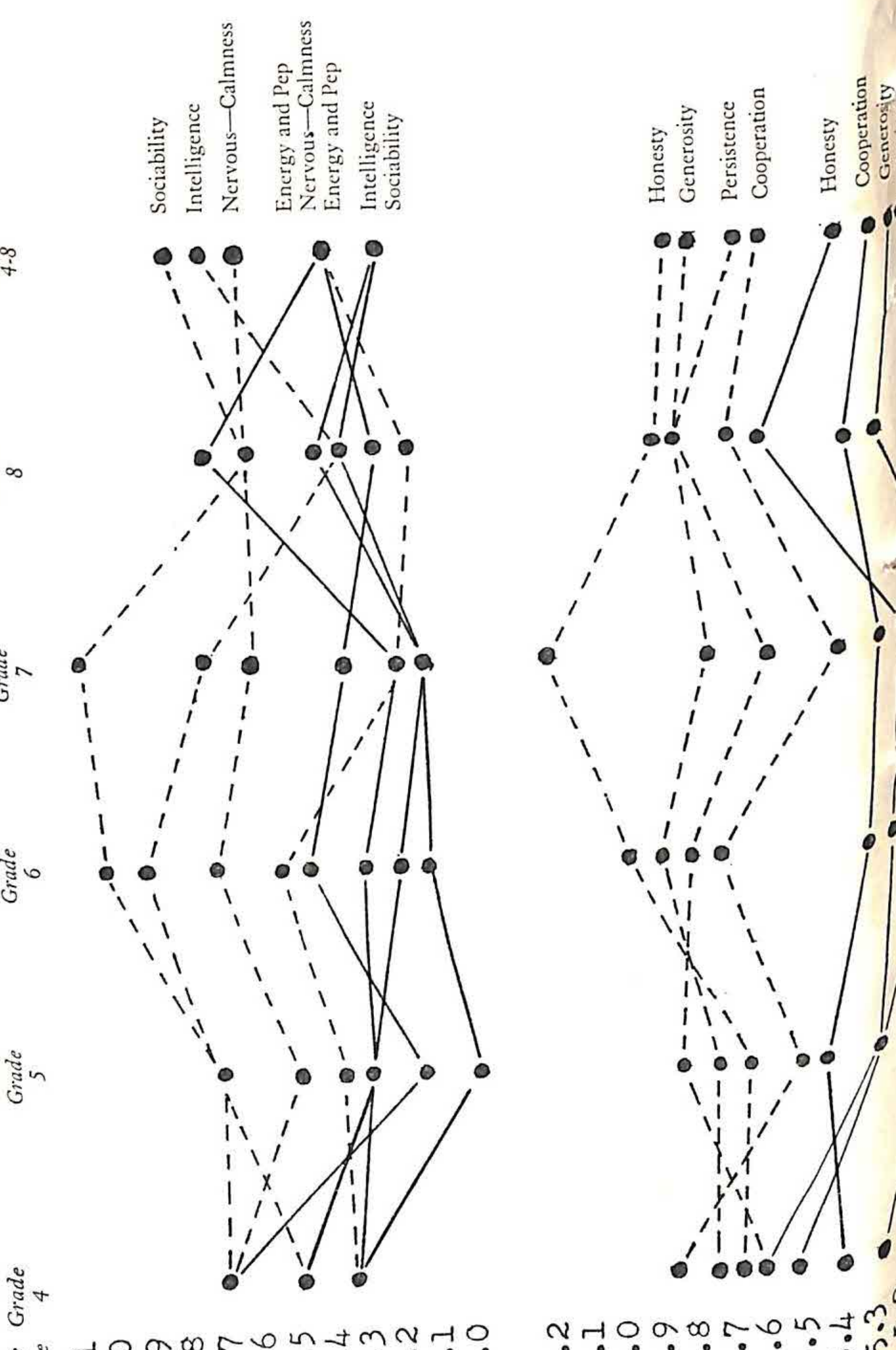

Generosity
Cooperation
Honesty
Honesty
Persistence
Persistence
Generosity
Cooperation
Boys——
Girls -------
6.2
6.1
6.0
5.9
5.8
5.7
5.6
5.5
5.4
5.3
5.2
5.1
5.0
4.9
4.8
4.7
4.6
4.5
4.4

FIGURE 3—Mean ratings of peers as given by girls



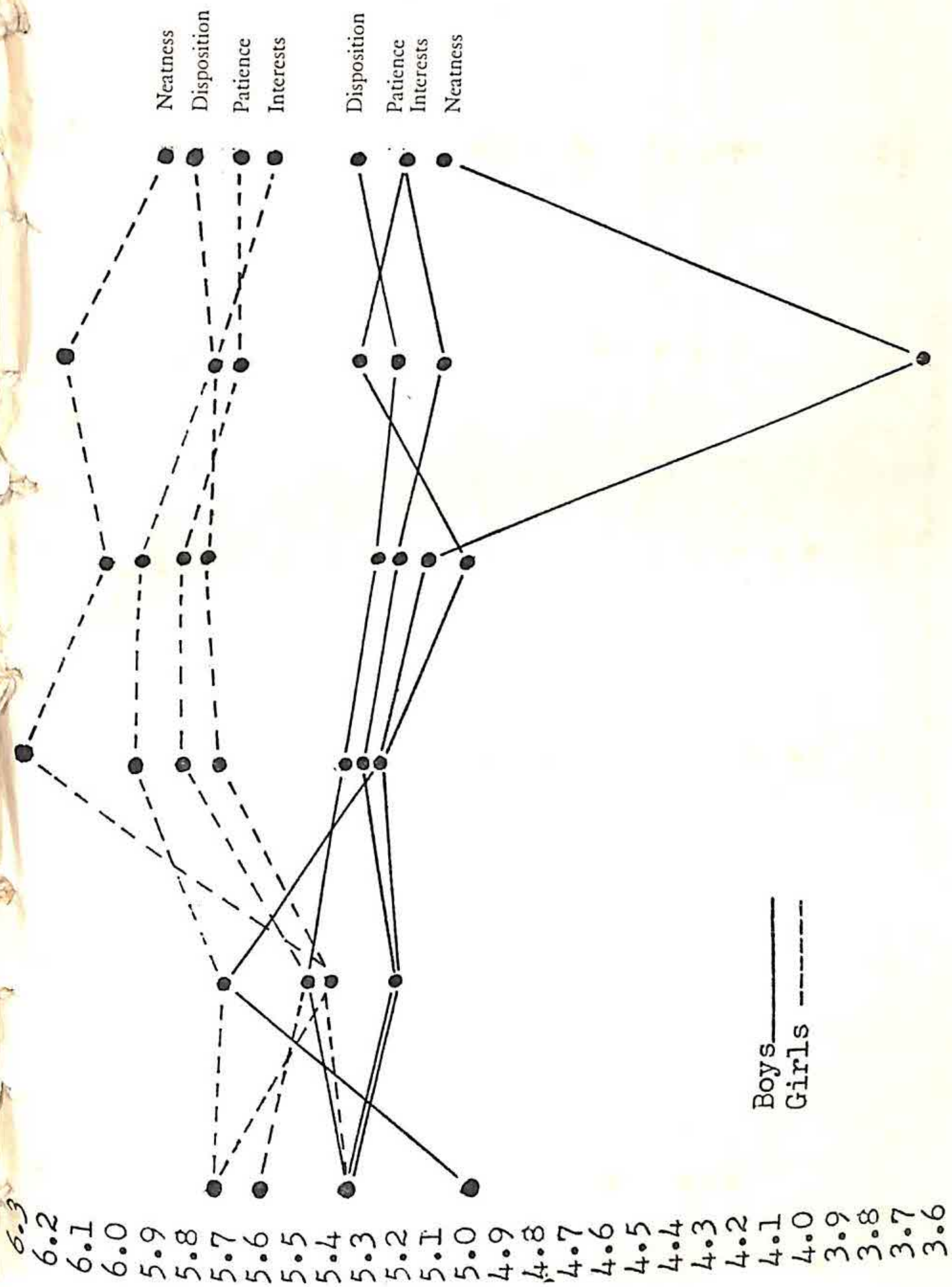
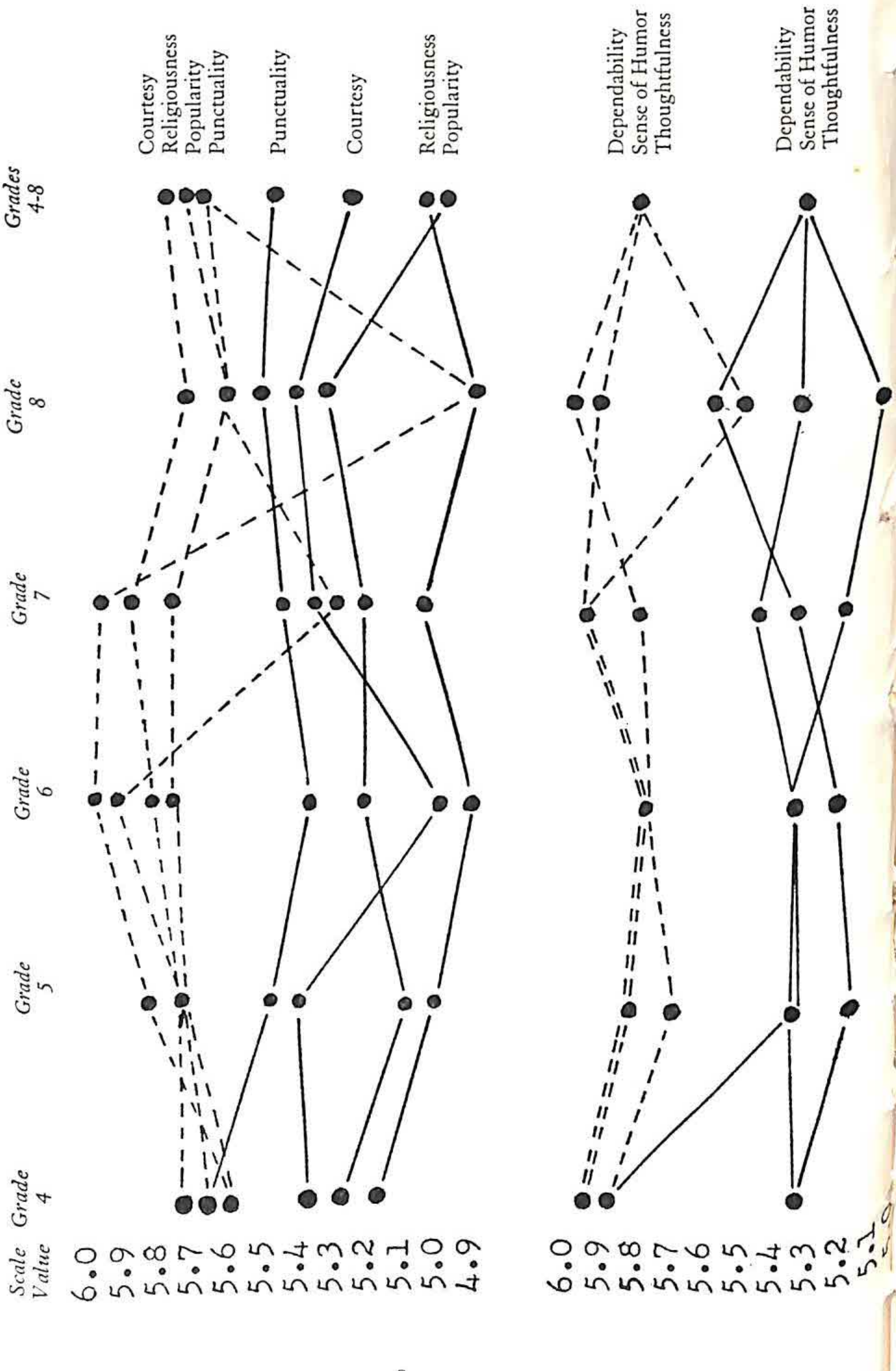
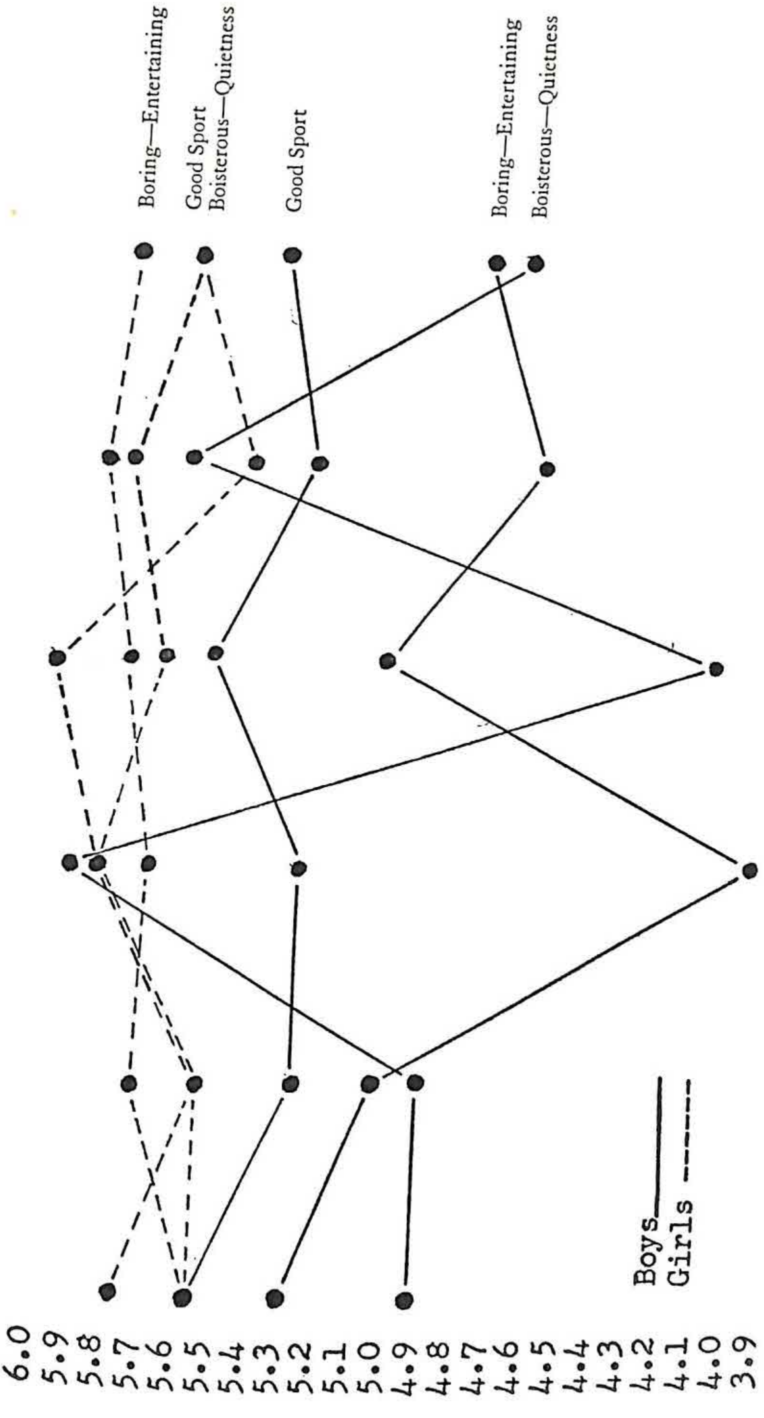

Neatness
Disposition
Patience
Interests
Disposition
Patience
Interests
Neatness
Boys
Girls
6.3
6.2
6.1
6.0
5.9
5.8
5.7
5.6
5.5
5.4
5.3
5.2
5.1
5.0
4.9
4.8
4.7
4.6
4.5
4.4
4.3
4.2
4.1
4.0
3.9
3.8
3.7
3.6

FIGURE 4—Mean ratings of peers as given by girls




Boring—Entertaining
Good Sport
Boisterous—Quietness
Good Sport
Boring—Entertaining
Boisterous—Quietness
Boys
Girls
6.0
5.9
5.8
5.7
5.6
5.5
5.4
5.3
5.2
5.1
5.0
4.9
4.8
4.7
4.6
4.5
4.4
4.3
4.2
4.1
4.0
3.9

INTERPRETATION OF RESULTS

An over-all preview of the graphs shows, with few exceptions, that there is very little grade to grade differences in the peer estimates of personality. But when each group of traits is analyzed separately, sex differences are readily discernible.

1. *As Boys See Their Peers.* On Figures 1 and 2 are graphed the mean ratings given by boys to the boys and girls of their class on each element of personality measured. A brief inspection of these two figures reveals that the boys are quite conservative in their ratings both of boys and of girls.

The most outstanding trait difference is for "energy and pep" (Fig. 1) which rates practically the same for all grade levels, but in which the boys are rated consistently above all other traits, and the girls are rated consistently lower than all other traits. Boys (Figs. 1 and 2) also rate girls slightly lower on good-sportsmanship, interests, entertaining, boisterous-quietness, popularity, patience, punctuality, and dependability. However, the boys also consistently rate the girls slightly higher than boys at all grade levels on courtesy and religiousness.

On the other traits there is an overlapping from grade to grade that does seem to indicate developmental trends. Particularly is the crossing of lines from seventh to eighth grade conspicuous in a number of traits, such as nervous-calmness, sociability, disposition, and sense of humor. In the lower grades the boys rate boys higher on these, but by the eighth grade the boys rate the girls higher on these elements of personality. Whether the real change is in the boys who did the rating, or in the girls who are rated, is a question not answered!

2. *As Girls See Their Peers.* Turning to Figures 3 and 4, one observes a marked change in the general appearance of the graphs. On these, the rating is done by the girls. Most outstanding is the fact that in practically all cases girls rate girls higher than they rate boys. The only exceptions to this occur on three scales: Girls give boys a small margin on energy and pep in grades four, seven and eight; on punctuality in grades four and eight; and on boisterous-quietness in grades six and eight. In the total of 220 means represented in Figures 3 and 4, only seven means favor the boys, while 213 place the girls higher.

However, three definite developmental trends are perceptible in the graphs of these two figures : 1. In a few scales, such as dependability, interests, sense of humor, and disposition, the grade level ascents or descents are parallel. 2. In the others, such as sociability, patience, generosity, honesty, and estimate of intelligence, there is a widening of the differences between sexes from the fourth to the seventh grade, followed by a narrowing of these differences from the seventh to the eighth grade. 3. In a few scales, such as neatness, good sportsmanship, and punctuality, the spread between the ratings of the sexes increases from the seventh to the eighth grade.

IMPLICATIONS AND CONCLUSIONS

The present investigation reveals pertinent contrasts between boys' judgments of the personality of their peers and girls' evaluation of peer personality.

Boys judge boys slightly higher on some elements of personality, but are far more conservative, exhibiting only small differences in their judgments of boys and of girls.

Girls, on the other hand, show extremely decided preferences for girls in their evaluations of the elements of personality herein measured.

The study reveals clearly that boys and girls of the elementary school are capable of having and of expressing judgments of peer personality.

Further and deeper analyses of similar data might reveal additional pertinent facts relative to the sex doing the rating. What is there in the boy's personality that makes him more conservative than the girl? Do the girls think themselves superior to boys on these twenty-two components of personality? What significance is there in the obvious shifts in judgments of peer personality from seventh to eighth grade?

Additional study of the contrasts brought into focus on specific components of personality investigated in this experiment could be both enlightening to those studying child development and profitable to the children whose personalities are in process of development.

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FAMILY BACKGROUNDS OF ASSERTIVE AND NON-ASSERTIVE CHILDREN[1]

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This paper is a review of the literature to obtain leads as to the family backgrounds of ascendant and non-ascendant children which in turn could constitute the hypotheses of future investigations. The ascendance studies, especially the last four by the writer, indicate wide individual differences both in the quantity and quality of ascendant behavior between preschool children from the upper socio-economic and educational levels. But they give little information about the environmental factors which differentiate one type of ascendance from the other. No study has been made of the significant question of what kind of homes produce individuals ascendant enough to go after what they want but at the same time accomplish their purposes in socially positive ways; individuals not only trained in democratic methods such as discussion and compromise, but motivated by values which respect personality. For leads as to possible relationships it has been necessary to go to studies which investigate several personality traits similar to ascendance. The term *assertive behavior* is being used in title and context to cover these several traits. The limitations of bringing together in this piece-meal fashion the findings of many studies must be recognized at the outset.

Definition of Ascendance

Ascendant behavior is defined in the later studies as follows: (32, p. 42)

> Ascendant behavior is any kind of behavior by which an individual attains or maintains mastery of a social situation or attempts to attain or maintain mastery so that he is in control of his own activities and can carry out his purposes. In terms of overt behavior at the preschool age, attempts at mastery of a situation include:
>
> 1. Attempts to secure materials he wants from his companions.
> 2. Attempts to direct or influence the behavior of companions.
> 3. Attempts to defend himself, his possessions and activities, and to resist the direction of others.
>
> Mastery includes:
>
> 4. Success in the above three types of attempts.

Ascendant behavior varies among individuals not only quantitatively, in terms of how frequently one is assertive; but qualitatively, in terms of

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[1] This article is based in part on two reports given at the 1951 Groves Conference on Marriage and the Family and the 1951 National Council on Family Relations.

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the social acceptability of the methods used. From the standpoint of regard for personality and the effect on social relationships, there is a vast difference between a child saying to his companion: "If you don't do what I tell you to I'll smash your truck," and "I know. Let's play we're making a road. I'll bring the sand to you in the truck and you sift it."[2] Any investigation of family backgrounds should include in its purposes, therefore, an attempt to distinguish between the homes of assertive children who use socially acceptable methods and the homes of those who use socially unacceptable methods.

In the ascendance studies, *acceptability* was defined as follows:

> Any method is held to be socially acceptable which shows regard and appreciation for human personality and welfare: i.e.,
>
> 1. Does no bodily harm and inflicts no physical pain on another person.
> 2. Does no injury to his personality or ego.
>   a. Recognizes the right of a human being to some share in decisions concerning himself and permits the freedom necessary for voluntary action.
>   b. Requires of another no loss of status, no sense of defeat or thwarted purposes.
>   c. Accepts another as a human being with powers of reason, desires, and purposes which are to be considered. (32, p. 46)

It should be noted that this definition would hold only in a democratic society whose philosophy rests upon respect for personality.

What tentative answers can be found in the literature, then, to these four questions:

1. What types of homes make for assertive children?
2. What types of homes make for unassertive children?
3. What types of homes make for socially acceptable assertiveness?
4. What types of homes make for socially unacceptable assertiveness?

Pertinent Findings of the Ascendance Studies

Contributions of the ascendance and closely related studies to significant home factors are as follows:

1. Three-, four-, and five-year-old nursery school children, all from homes in the upper socio-economic and educational levels show wide individual differences both in amount of ascendance and in acceptability of method. The related studies of Anderson and Chittenden have similar results. (1, 10, 21, 32, 33, 34)

2. The only children of lower socio-economic backgrounds that have been measured were residents of an orphanage and thus their scores cannot be

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[2] In Anderson's terminology (1), the first would be dominative and the second integrative.

interpreted in terms of family background (15). Studies of Davis on social class differences have found that lower class parents not only tolerate but encourage forceful methods of assertiveness frowned upon in middle class culture (12).

3. A comparison of northern and southern three- and four-year-old nursery school children from the upper socio-economic and educational brackets indicates no measurable differences in frequency of ascendant behavior or in acceptability of method between these two sub-cultures (34).

4. In a study by Stott and Mummery (35), young parents of high educational and socio-economic status appeared to rate children's ascendant behavior in a manner consistent with a democratic philosophy. The fact that the scores of children from similar homes are less than half-way up the scale of positive social acceptability (34, p. 190) suggests that a study of relationships investigate not only parents' feelings and attitudes but actual guidance practices and parents' own behavior in both parental and peer relationships.

5. A comparison by Thompson (43) of two educational programs indicates that a warm, friendly, helpful, responsive teacher-child relationship which satisfies a child's need for information is favorable to emotional security as indicated in part by higher ascendance scores and more constructive behavior when faced with failure. A positive approach to difficulty, as Murphy (26) has suggested, is undoubtedly a manifestation of a child's attitude toward himself which underlies social behavior and thus probably affects his assertiveness. Inasmuch as Thompson used the *Jack* measure of ascendance, his results do not discriminate between socially acceptable and unacceptable behavior.

WHAT HOME CONDITIONS ARE RELATED TO AMOUNT OF ASSERTIVENESS?

Studies of Parent-Child Relationships

Early studies of parent-child relationships suggest trends some of which have been corroborated by later investigations. Their results are summarized by Radke (38). In a more recent study Miles (30) found significant relationships between adolescent social behavior and status among peers and (*a*) socio-economic status and education of parents, and (*b*) the attitudes and opinions of parents regarding child training and their goals for their children. Parents of successful leaders differed greatly from parents of asocial, outcast, and overlooked children. They were less inclined to protect children from normal risks and responsibilities, or to prevent a normal degree of independence. They tended to be less restrictive in degree of control; to allow more leeway in decision making, using own judgment, and experimenting; and to give more respect to child personality in such ways as consideration for his rights and opinions. They appeared to possess superior ability in evaluating child behavior and personality traits desirable for optimum development.

Some of the best controlled studies in this area are a series from the Fels Institute. Over a period of years Champney, Baldwin and others have contributed a good deal by the development and refinement of a battery of graphic rating scales of home environment and by exhaustive studies of relationships to child behavior. In one paper by Baldwin (7) the consequences of Democracy and Control in the home are investigated. When the Parent Behavior Rating Scales were factor analyzed, two positively related factors of home environment emerged. The first, Democracy, is characterized by: (7, p. 129)

1. A higher level of verbal contact between parent and child; i.e.,
    a. Consultation about policy decisions.
    b. Explanation of the reasons for rules.
    c. Explanation in response to the child's curiosity (answering why and how questions).
2. Lack of arbitrariness about decisions.
3. General permissiveness.
4. Restraint on emotionality.

The second, Control, is characterized by:

1. Restrictions on behavior which are clearly conveyed to the child but not necessarily arrived at democratically.
2. Lack of friction over decisions of discipline, which may be due to:
    a. Talking back being prohibited.
    b. Easy conformity of the child.
    c. Policy being the result of mutual agreement.

Baldwin's results indicated that Democracy, when Control was held constant, generally raised the activity level and produced a significantly more aggressive, fearless, planful child likely to be a leader but also more cruel than the average child and tending to be disobedient, a non-conformist, and more curious than the average. The effects of Control when Democracy was held constant were more significant and in the opposite direction. When the two occurred together, high Control and a lack of Democracy had marked consequences, significantly lowering aggressiveness, cruelty, quarrelsomeness, resistance, disobedience, negativism, excitability, affectionateness, curiosity, originality, and fancifulness. It would seem to the writer that high Control and low Democracy rules out the possibility that any of the control comes from democratic sources, and therefore that such homes could be called authoritarian. A home in which there was this authoritarian type of control would be likely to produce a child who was quiet, well-behaved, non-resistant, unaffectionate, and at the same time socially unaggressive, and restricted in curiosity, originality, and fancifulness. The effects of high Democracy and a lack of Control were, in general, opposite in direction but few of the variables were statistically significant.

Are these the types of personality traits expected from democratic and authoritarian homes? Baldwin states that the results generally confirm our impressions of the effects of freedom and restrictiveness. He says that authoritarian control, in getting conformity to cultural demands, seems to rob the child of the personal integrity which gives him a mind of his own and supports him in finding out about things and carrying out his ideas. It obtains conformity at the expense of personal freedom in areas not intended to be restricted; for example, in freedom to grow in ideas and in affectionateness. Democracy, on the other hand, runs the risk of producing too little conformity to cultural demands (7). But would we logically expect a home in which democracy was a part of everyday living to produce a child who showed so little consideration for others that he was actually more cruel than other children? Democracy as defined in the Fels' studies might be expected to produce the results obtained; but democracy which is not extreme permissiveness but instead sets limits to freedom, in the writer's opinion, would not have those results. Similarly, the behavior related to Baldwin's factor Control would seem to result from a certain kind of control, namely, strictly authoritarian. These studies deal with control almost entirely in terms of *more* or *less* restriction, *more* or *less* clarity, *more* or *less* success (lack of friction). In fact, they lump together a lack of friction due to (*a*) talking back being prohibited, (*b*) easy conformity on the part of the child, and (*c*) the fact that the policy is the result of a mutual agreement between parent and child. The effects of control as they impinge on the child are quite different if he has had some part in making disciplinary decisions than if he has not; if restrictions are based solely on the convenience of the adult or his need to express resentment, or on a real consideration for the child's welfare. To make differentiations between homes that are meaningful in terms of ascendant, non-ascendant, socially acceptable and socially unacceptable ascendance, the concept of control must take into account not only the degree of control, but its pervasiveness, its sources (whether from adult, child, or by mutual agreement), and the motives or goals which prompt it. The key to the situation is not so much whether there is or is not control in the home, but when, why, and by whom it is exercised.[3]

Similarly the factor Democracy, in the writer's opinion, is a one-sided concept. The Fels' definition indicates that the parents show respect for the child's personality, but it has nothing to say about the fact that the democratic home teaches the child consideration and respect for others; that it gives the child experience and guidance in seeing the other person's point of view, and in using socially considerate methods of carrying out one's purposes. Democracy concerns itself with social responsibility as well as privilege. It is permissive only under circumstances that do not interfere with the rights of others. The social values of democracy have been left out of the definition, as if the child develops his personality in a vacuum instead of in a group of others who also have needs and rights. For this reason, the findings include the socially negative as well as the socially positive traits undifferentiated from each other. The Fels' concept seems better to describe a child-centered than a democratic home.[4] Just as in the analysis of control, democracy has other dimensions than *more* or *less* reasoning and permissiveness. Baldwin states that, as practiced in the Fels' families, Democracy seems to be accompanied by sufficient Control to avoid too little conformity. I would like to suggest that the Fels' democratic families differed from other families, although the measure failed to catch it, not so much in the amount of control as in the kind: a kind of control that does not block and hem in assertiveness; but, respecting personality, channels it in ways to make it socially acceptable and creative, thereby actually freeing it, for control and freedom are not diametrically opposed.[5] In effect, knowing that without control there can be no democracy, these families apparently possessed a sense of values which set limits to permissiveness. In our research investigations we need to capture just what these families did. Can we describe it in terms of the *areas* of control, the *limits* of freedom, etc.?

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[3] In this point of view, the writer has been influenced by Anderson (5).

Likewise, the Fels' concepts seem to give no social evaluation to their child behavior variables of aggressiveness and competitiveness, although Baldwin does state that these two variables take on a different flavor in each of the two overlapping syndromes of Aggressiveness-Competitiveness-Leadership-Curiosity and Aggressiveness-Competitiveness-Cruelty-Quarrelsomeness-Resistance.[6] The relationship of democracy and control to what we are broadly calling assertiveness can be sharpened and modified by a refinement of concepts in terms of goals, values, social acceptability in a democracy, etc. A failure to evaluate in terms of developmental goals and to separate out the desirable from the undesirable, the democratic from the undemocratic aspects is seen in the Fels' definitions of Control, Democracy, Permissiveness, General Activity Level of the home, causes for Lack of Friction, Aggressiveness and Competitiveness. Each of these variables of child and of parent behavior is treated as two-dimensional only, whereas each is multi-dimensional. To be of practical use in the guidance of children, research findings must discriminate not only between home environments which allow free expression of the drive to assertiveness and those which block it, but between factors which allow undesirable expression and those which channel self-assertion in ways to make it socially positive and integrative. Assuming adequate research tools, future studies that make qualitative as well as quantitative distinctions in definitions should more effectively differentiate just what it is in the home that produces non-assertiveness, and what it is that favors socially acceptable as opposed to unacceptable assertiveness.

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[4] In one statement Baldwin indicates that the factor Democracy describes the philosophy of the early 1930's when there was much emphasis on giving a child "freedom to express his personality."

[5] In fact, the general factor accounting for the overlapping of Democracy and Control may well be considerateness and respect for personality.

[6] The "general factor of activeness" which Baldwin says accounts for this overlapping may be very similar to assertiveness without any social evaluation.

Baldwin discusses the relationship to socialization of a third aspect of home environment, its General Activity Level as shown variously by (*a*) a well-ordered schedule, (*b*) a continuous flow of criticism and suggestion, (*c*) child-centeredness, and (*d*) special training and acceleration. The findings indicate that Democratic Active homes result in more aggressiveness, quarrelsomeness, competitiveness, resistance, curiosity, emotional excitability, impatience and cruelty than do Democratic Inactive homes. This factor appears to the writer to be *inter*-activity. Here, again, it would seem that a definition is called for in terms of the quality of the interaction, the feeling tone and motivation behind the above manifestations. Some of the findings would seem to be related to such motivation of the home as neurotic drives. In such cases, the child, feeling resentment, may rebel against the constant pushing and the lack of opportunity to be himself. This rebellion may influence the quality of his assertiveness.

Baldwin concludes that at the preschool years high (inter-) activity is accompanied by non-conformity and rebelliousness, and that children of four years of age do not discriminate between social and anti-social forms of activity. The predominant effect of parents on the socialization of the preschool child is to raise or lower his ability to behave actively toward the environment (whether to express hostility or more socially motivated behavior). However, from three other investigators, Anderson (1,2), Chittenden (10), and Mummery (32, 33, 34), we have considerable evidence that when a measure which makes qualitative distinctions in assertiveness is employed, we get differences between children, and behavior which is preponderantly acceptable as young as three years of age. While Chittenden obtains higher scores for Domination than for Cooperation in a situation in which there is only one toy to be had, she shows that this balance can be changed by teaching devised (*a*) to help the child interpret situations from the other child's point of view, and (*b*) to help him work out solutions in line with that interpretation. These three-, four-, and five-year-old children apparently did learn to discriminate between social and anti-social activity. One would therefore expect that the home environment could be a determining factor in the social acceptability of a child's ascendant behavior.

In his conclusions, Baldwin (7) states that freedom and permissiveness allow the child to become outgoing and spontaneous, but interaction (the parents' outgoingness and warmth) actively encourages and pushes him into social interaction. Because "warmth" seems hardly synonymous with "General Activity Level," the writer cannot see how these conclusions stem from the findings. Nevertheless, they suggest a possible relationship between assertiveness and home factors of warmth and responsiveness.

In a later paper, Baldwin (8) relates combinations of high or low amounts of the three syndromes of Warmth, Democracy, and Indulgence to a battery of 45 child behavior variables more similar to the different methods of ascendance than those used in the previous study (31 and 8, p. 58). His findings indicate that the significant effects of Democracy, by far the most important of the three factors, seem to reflect three general sorts of consequences: (*a*) more active, socially outgoing behavior of both the hostile and domineering and the friendly kinds; (*b*) more success in aggression and bossing; and (*c*) more curiosity, originality and constructiveness. These results suggest even more strongly that ascendant children probably come from democratic homes.

What is it about a democratic home which produces these effects? As Baldwin says, democratic parents encourage free exploration and experimentation and thus provide intellectual stimulation. By definition, these democratic homes were permissive and freedom-giving, explained reasons for regulations, allowed the child to participate in family policies, and answered his questions, which in turn encouraged further exploration. Thus, these children have more ideas to contribute to group play and are likely to do more directing and suggesting; i.e., be more ascendant.

The writer would like to suggest that the chief effect of democracy in the home as far as the amount of children's assertiveness is concerned, may well be in influencing the child's concept of himself—his feelings about himself. Logically, it would seem that the democratic attitudes and practices which he experiences would add up to more confidence in himself, which in turn might be the chief determinant of his assertiveness. In a democratic home the child's wishes and opinions are listened to and considered; his needs for knowledge and exploration are met; he is treated as a reasonable and reasoning individual. Because he is shown more respect, he develops more self-respect as a reflection of the adults' attitude toward him. His greater fund of information, ideas, and skills also give him an advantage which will be reflected in his attitude toward himself and toward his peers. Having some part in family decisions and practice in talking over and solving situations within the family give him confidence and teach him to face rather than to withdraw from personal differences. Jack's conclusion that self-confidence is related to ascendance (21), gives some support to this viewpoint that democracy increases self-confidence. As a result of her hypothesis based on observations in the nursery school, she trained non-ascendant children in the acquisition of certain skills such as putting puzzles together and then gave them an opportunity to play with these puzzles and other toys, together with children unfamiliar with them. When these trained children were re-tested for ascendance, their scores had greatly increased. Thus, it might be expected that assertive children would come from homes which give them self-confidence, and democratic homes would seem to do just that. It is interesting to note in this connection that the Fels' data show a relationship between Democracy in the home and small muscle skill (8).

Two other characteristics of democratic homes mentioned by Baldwin may be related to assertiveness; namely, high intelligence level and the fact that they are more likely to send children to nursery school (6 and 8, p. 59).

Studies of Father-Child Relationships

Generally speaking studies have been in terms of mother-child relationships, in spite of the significant effect the father appears to have on aggressive behavior. Sears' findings indicate that the father contributes heavily to sex-typing of *boys* in the preschool years in regard to their expression of aggression, for his absence leads to a reduction in frequency of such actions in doll play (39). "The father is nearly always a model and his masculine characteristics ordinarily seem to include greater aggressiveness and greater tolerance for the social expression of aggression than do the feminine characteristics of the woman." (cf. Mead 29) Although there is very little overlap of aggression with unacceptable ascendance, Sears' findings suggest that investigations of family background could well be in terms of (*a*) the differential effects on boys and girls; and (*b*) the father's role in relation to personality development as well as the mother's. Reasons for this suggestion are the following indications from Sears' study:

1. That the father is a more aggressive model than the mother.
2. That the father is more tolerant of the social expression of aggression.
3. That the father exercises more rigid control over the boy, the mother over the girl.

Socio-Economic and Cultural Factors

The children in Sears' study were those of working mothers and were enrolled in War-time Day Care Centers. They were upper-lower and lower-middle class families. Would the same trends be found in upper socio-economic homes? The work of Davis indicates that forceful direct methods are approved and rewarded types of ascendance among lower-class families as compared with middle-class families (12). A recent study by Stott and Mummery (35) indicates that, among highly educated upper socio-economic families, such forceful behavior is not considered acceptable as judged by ratings of either mothers or fathers. Further support for the advisability of an analysis in terms of class differences is given by Duvall (13). She concluded that a "good" parent and a "good" child vary with a scale of four levels of social class regardless of whether the parents are Jewish, Gentile, Negro or White. Ericson and Davis also have shown that middle-class (White and Negro) parents place children under a stricter regime with more frustration of their impulses than do lower-class parents (14). The findings of Stott in a number of studies suggest that comparisons should be made between rural and urban homes. He found differences in parent-child relationships and in child adjustment in city, small-town and farm homes; e.g., the three types of homes varied in strictness of discipline, and the children varied in traits involving personal adequacy. One aspect of child development in which the farm home setting seemed at a disadvantage was that of social relationships (40). In the light of the known relationships of social behavior to parental control, studies of the dynamics of ascendant behavior should take into account the possibility of class and cultural differences.

Under What Home Conditions Do Children Learn Methods that Are Considerate?

The studies reviewed so far have had little to offer by way of a description of the family backgrounds of children who use acceptable as compared with unacceptable methods of assertion. There is almost no research to show how respect for personality develops or how assertive methods which show consideration are learned. However, we do have some evidence that preschool children do show considerateness and, indirectly, that in our culture they are developing some of the social sensitiveness basic to the sharing, cooperative types of behavior which, by definition, are acceptable in a democracy (1, 10, 17, 18, 22, 32, 33, 34, 37). But none of these studies relate considerate types of ascendance to home background.

Findings of Studies on Family Relationships Pertinent to Learning Considerateness

"Studies of the relation of parent-child and parent-parent relationships to child behavior indicate that, in general, the child who comes from a home atmosphere where such relationships are happy and wholesome is more likely to be cooperative and socially well adjusted in his own age group than the child whose home life is fraught with tensions between him and his parents and between his parents." (11, p. 183; 9, 16, 45) In a recent study of home backgrounds of well adjusted children, Langdon and Stout conclude that the factor which distinguishes these homes more than any other is the factor of love (24, 25). They say: "The attitudes toward the child seemingly become, then, for these 158 children, the explanatory factor—love and affection, being wanted, being appreciated, trusted, being accepted as a person, being looked upon with respect as an individual." (24, p. 459) These conclusions corroborate the earlier results of Stott (41) that homes in which there is affection, confidence and companionability are favorable to good adjustment. The findings of Radke (38) on the relationship of children's behavior to discipline add weight to a hypothesis that the methods a child uses are directly related to the guidance and control he receives. Radke found the following significant relationships between ratings of the behavior of four- and five-year-old children and home atmosphere:

> 1. In favor of democratic vs. autocratic atmosphere in getting along with others, considerateness, and emotional stability.
>
> 2. In favor of freedom-giving vs. restrictive disciplinary atmosphere in rivalry, popularity, and colorfulness.
>
> 3. In favor of mild vs. severe punishment atmosphere in talkativeness, rivalry, affection, considerateness and sensitivity.

An unpublished Master's thesis by Trumbo (44) obtained correlations between the Fels' Parent Behavior Scales and the ratio of Domination to Cooperation. She found that a proportionately high amount of Domination was positively related to disciplinary friction, discord in the home, restrictiveness of regulations and coerciveness of suggestion; and negatively related to effectiveness of policy, rapport with child, understanding of children's problems, readiness of criticism, democracy of policy, readiness of explanation, intensity of contact, acceptance of the child, clarity of policy, justification of policy, and emotionality toward child. These studies, contrary to Baldwin's results, agree on a relationship between (*a*) a democratic home atmosphere with respect for the individual and considerate, cooperative behavior; and (*b*) an autocratic climate with coerciveness and severe punishment and dominative behavior. They also show considerable agreement as to the relationship (*a*) of affection, companionship, rapport, confidence and acceptance to cooperativeness; and (*b*) of discord in the home to uncooperativeness. The foregoing summary assumes that domination is the opposite of considerate and cooperative behavior.

A paper by Harris (19) on the socialization of delinquent boys states that they seem to differ from non-delinquents in several aspects of the parent-child relationship. In the case of the delinquents, there is a lack of closeness of family ties, less interaction, less warmth and affection, less supervision and restraint, less identification with parents and more indifference on the part of the parents. In general, these conclusions tie in with the findings for well adjusted children in the emphasis on the necessity of affection, rapport and a feeling of belongingness. The apparent conflict in results as to the effect of strictness of control upon the social acceptability of assertive behavior may be only a matter of definition of restraint and restrictiveness. At the same time it suggests that the relationship of control to acceptable-unacceptable assertiveness may not be a simple linear one.

Studies of School and Club Environments

Studies of school and club environments indicate the following factors as favorable to sympathetic, friendly, cooperative responses: (*a*) a nursery school teacher who is noticeably spontaneous, warm and responsive to findings of Stott in a number of studies suggest that comparisons should be made between rural and urban homes. He found differences in parent-child relationships and in child adjustment in city, small-town and farm homes; e.g., the three types of homes varied in strictness of discipline, and the children varied in traits involving personal adequacy. One aspect of child development in which the farm home setting seemed at a disadvantage was that of social relationships (40). In the light of the known relationships of social behavior to parental control, studies of the dynamics of ascendant behavior should take into account the possibility of class and cultural differences.

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Studies of school and club environments indicate the following factors as favorable to sympathetic, friendly, cooperative responses: (*a*) a nursery school teacher who is noticeably spontaneous, warm and responsive to children (37, Murphy); (*b*) a nursery school or elementary teacher and other children whose behavior toward the child is integrative rather than dominative (1, 2, 4, Anderson); and (*c*) a democratic rather than autocratic club atmosphere (28, Lippitt). In these three studies the effect could be due either to the model the adult gives the child, or to a sense of security which made possible socially oriented responses instead of protective ones.

Are the Child's Feelings Toward Himself Related to Acceptable Ascendance?

Murphy, in attempting to account for the great variation in an individual child's sympathetic responses, gives us a lead as to where to look for significant relationships to acceptable ascendance. She says: "The relation between the child's ego-status in the situation at the moment and his long-time drives appears to be the most important factor influencing variations in the child's behavior from one situation to another. . . . insecurity makes either for egocentric, defensive behavior or for a specious solicitude which is no more desirable than the defensiveness. 'Training' in social behavior at any age level is not likely to be sound when it is imposed upon the foundation of an insecure personality." (37, p. 188) In other words, a child's attitudes toward himself are important undergirdings to social behavior which may influence his capacity for (*a*) sensitiveness to and concern for others, and (*b*) training in socially acceptable behavior. Further support for this theory is given by three other investigators. Anderson (1) submits data to back up his theory that Domination is the response of an insecure person who is afraid of change and must defend the status quo; whereas Integration is the response of a free, secure person, flexible, yielding, unafraid of change, and thus capable of finding new purposes through seeing the other person's point of view. In a study by the writer (32), non-ascendant children were given training in certain skills to increase self-confidence. During the pairings with untrained children in which the training toys were used, these trained children exhibited behavior which was predominantly of a helping, sharing, "showing and telling how to do it" variety. The children who *knew how* were adequate to, and secure in the situation. They had no necessity to defend their own insecurities, and were thus free to get out of and beyond themselves and their problems and think of others. Being in a secure position, these children could use the acceptable social techniques they already knew. Tension is reduced with increased security, so it would be logical to expect more acceptable, less emotional, destructive, and resistant behavior. Futhermore, it is probable that a secure child is free from tensions which drain off his energies and is thus emotionally ready to learn more acceptable methods. Additional experimental evidence in support of this hypothesis that security is an important factor in the type of assertiveness manifested by children is given in the studies of Lippitt and others (27, 28) on the influence of democratic and authoritarian group atmospheres on the behavior of ten-year-old boys organized into clubs of five members each.

"Resistance, expressions of hostility, demands for attention, competition, and hostile criticism were twice as frequent in the 'autocratic' as in the 'democratic' group. The chief difference in the group atmospheres was in the attempts of the leaders to create feelings of belonging to the group. The autocratic leader made all the decisions and rules and treated the boys in a somewhat impersonal manner, while the democratic leader established man-to-man relationships with the club members." (11) Earlier it was stated that security may be related to the *amount* of assertiveness. The studies just mentioned suggest that an environment which increases a child's security and adequacy may be related also to the *quality* of assertiveness.

Children's Experiences and Guidance in the Home

It would seem that the home should provide experiences and guidance as well as a climate favorable to assertiveness and socially integrative behavior. Jack, Page and Mummery demonstrated an experimental technique whereby ascendant behavior can be increased, assumedly by helping children develop a sense of adequacy and self-confidence in peer relations. The method consisted of teaching non-ascendant children to be proficient in certain verbal and small muscle activities (e.g. to tell a story, and to put together puzzles of various sorts) and then allowing them to use these skills when paired with children who had not been trained. Their greater skill was apparent to both trained and untrained children, and along with it seemed to come an increase in self-confidence as evidenced by increased ascendance. Thus, giving a child definite training in skills puts him in a more favorable position in his group than the one he previously occupied, and apparently frees his assertive tendencies. As shown by Mummery (32) this type of training did not affect the quality of the methods used by these children. However, such training might give them the emotional readiness to benefit from guidance specifically designed to improve assertive methods. In an experimental set-up in which dolls were faced with social situations similar to those occurring in nursery school, Chittenden (10) was successful in modifying the quality of children's assertive behavior in the direction of less forceful types through teaching ways in which toys could be shared so both children would have a good time. No studies known to the writer are designed to measure the effect of direct teaching in the home on the quality or quantity of children's assertiveness. But experiences similar to these two experimental techniques might be equally effective in the home. Do parents avail themselves of opportunities to influence children's ascendant methods? Casual observation suggests that perhaps too often we interpret conflicts over possessions in terms of rights instead of helping children to find solutions which would be integrative in purpose (such as using toys together, sharing activities, etc.). It would seem that practices showing so little consideration for others' interests as the rule "It belongs to the one who had it first" would not lead to good human relations.

A home which is truly democratic, in the opinion of the writer, gives children many shared experiences such as planning, working and playing together, adults and children. Disagreements which arise between family members are resolved through a process of consideration and weighing of the needs and desires of all individuals. This fosters understanding of developmental needs of persons of different ages and dissimilar interests. Children thus have (*a*) opportunity to learn to see another's point of view and develop a willingness to work out mutually satisfying solutions, and (*b*) experience in the democratic methods of discussion, compromise and cooperation. Such experiences in mutual sharing and cooperation could be expected to nurture an attitude of "our-ness" and "we-ness" instead of "mine" and "thine" and a feeling of responsibility for the welfare of the other person and the group as a whole. In Lippitt's study (28), the boys and the leaders planned together. In the training program to increase the self-confidence of non-ascendant children (32), the adult not only taught skills; it was an experience in which she shared with the child her greater knowledge and skill, showing how, telling, praising, supporting. In each of these studies, the children were given a model of socially acceptable methods which may have had direct bearing on the behavior later observed in them. It would seem that future studies of family backgrounds should include factors such as the example supplied by the parent, experiences in democratic living, and direct guidance of social contacts. Further, they should investigate the effects of sibling relationships and placement in the family. Brothers and sisters could well influence a child's assertiveness as a result of the kind of disciplinary control they provide, and their effect upon the child's developing ego.

SUMMARY

This paper presents a review of the literature to obtain leads as to the family backgrounds of ascendant and non-ascendant children which in turn could constitute the hypotheses of future investigations. Because it has been necessary to go to studies which investigated several personality traits similar to ascendance, the term *assertive behavior* is used as more inclusive. Answers to four questions are needed:

1. What types of homes make for assertive children?
2. What types of homes make for unassertive children?
3. What types of homes make for socially acceptable assertiveness?
4. What types of homes make for socially unacceptable assertiveness?

The somewhat confused findings of research emphasize the need for clarification of definitions of both home factors and personality traits in qualitative as well as quantitative terms. Nevertheless, there is rather marked agreement among studies that the extent and quality of democracy and control in the home may be important factors in both the amount of

ascendant behavior and the acceptability of the child's methods. Another factor suggested by the findings of several researches as probably favorable to both the quantity and quality of assertiveness is a warm, friendly, helpful, responsive parent-child relationship which satisfies a child's need for information.

Indications are that high amounts of assertiveness would be related to a home which is permissive and freedom-giving, which encourages exploration and experimentation, which answers a child's questions, assists him in acquiring skills, explains reasons for regulations, allows the child to participate in family policies, allows considerable independence of decision, respects the child's rights and opinions, and is not inclined to shield him from normal risks and responsibilities.

As to the acceptability of the child's assertiveness, there is considerable agreement among studies of parent-child and teacher-child relationships on the following points:

1. That rapport, confidence, trust, affection, companionship, acceptance, feelings of belonging, a sense of adequacy, skills, happy relationships among family members and a democratic, non-restrictive type of control with respect for the individual are related to cooperative, considerate behavior which by definition would be acceptable.

2. That discord in the home, coerciveness, severe punishment and autocratic discipline are positively related to dominative, forceful types of behavior which by definition would be unacceptable. As regards democracy, these conclusions are somewhat contradictory to those of the Fels' studies.

Other factors worthy of investigation in connection with acceptability are:

1. The parents' attitudes regarding the acceptability of children's ascendant methods.
2. The model supplied by the parents.
3. The quality of the guidance a child receives as regards his peer relationships.
4. The child's first-hand experiences in participating in democratic attitudes and practices in his daily home living; e.g., experience in planning together, in seeing others' points of view and in working out mutually satisfying solutions.

The suggestion is made that a child's sense of security and adequacy may underlie his capacity for assertiveness and for methods which show concern for others. The chief effect of the foregoing environmental atmospheres and practices may be in increasing the child's self-confidence and security which in turn may be the chief determinant of both the amount of assertiveness and the quality of his methods. Analyses in terms of rural and urban backgrounds, socio-economic and cultural values, in terms of sex, in terms of father-child and sibling relationships are all suggested. Finally, the opinion is expressed that, with definitions making qualitative distinctions, a democracy in the home which includes a type of guidance and control that nurtures consideration for others and channels behavior in socially acceptable ways will be found to be related to socially acceptable assertiveness.

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ORGANISMIC GROWTH: *P*-TECHNIQUE IN THE ANALYSIS OF LONGITUDINAL GROWTH DATA

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Considerable educational and psychological significance has recently been attached to certain organismic concepts, such as "unity of growth" and "interrelatedness of the growth processes." These principles refer to the nature of growth within the individual, and consequently are to be validated primarily by studies of individual growth rather than from analyses of group data. This paper is concerned with the use of the *P*-technique (4) for studying the interrelatedness of rates of growth among physical characteristics during adolescence.

Our knowledge about intra-individual growth is meager compared with what is known about inter-individual growth. There are, of course, several reasons for this condition. First, investigations into the nature of growth within the individual are contingent upon evidence from longitudinal studies, and many types of data have only relatively recently become available from various growth studies, such as those at the Institute of Child Welfare, University of California.

It is true that certain selected data on the subjects in the Harvard Growth Study were published as early as 1938. The subjects were approximately 7 to 17 years of age. As many as thirteen sets of annual measurements of a limited number of physical and psychological characteristics were reported for only 47 of 747 boys and 27 of 806 girls. Apparently requisite data for the study of the growth of individual children have been, and indeed still are, relatively scarce.

Second, statistical methods for analyzing many features of longitudinal data have not been extensively investigated. For certain studies of the nature of intra-individual growth univariate analysis is appropriate, and has been the commonest method of studying the individual.

Graphical analysis is adaptable to the study of intra-individual differences in physical growth and psychological changes. That such a procedure provides a useful approach may be seen from the recent description of somatic development in adolescent boys by Stolz and Stolz (8). However, graphical comparisons become cumbersome when many measures of several physical and psychological characteristics of an individual are to be considered simultaneously. It is relatively easy to ascertain the relationships between certain features of the growth curves for, say, height and stem lengths, but

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it is more difficult when curves of, say, five measures of skeletal growth are to be compared. For some problems, the analysis of numerous measures of growth might be more rewarding if it could be based upon some numerical index of relationship, such as coefficients of correlation and factor loadings, rather than upon a visual inspection of several growth curves.

Traditionally, coefficients of correlation have been computed between scores or measures obtained from a sampling of individuals; the method has been designated as the *R*-technique. The possibility of correlating persons (*Q*-technique) for a sampling of tests has been discussed by such writers as Burt (1), Stephenson (7), and Cattell (4), who have also considered other methods that have been labeled *P*- and *O*-techniques. Cattell has discussed the *P*-technique in its application to longitudinal data (4), and has illustrated the procedure in a study of personality characteristics of a single college student over a period of time (3). This particular technique appears to be useful for the study of the relationships among measures of growth within the individual. In *P*-technique, correlations are based upon measures from a sampling of ages rather than of individuals.

TABLE 1

COMPARISON OF *R*- AND *P*-TECHNIQUES

	R-TECHNIQUE			*P*-TECHNIQUE	
	Measures (rate of increment per annum)			*Measures* (rate of increment per annum)	
Subjects	Ht	Wt	*Ages*	Ht	Wt
A	63	53	10.5	63	53
B	49	13	11.0	30	3
C	72	43	11.5	80	34
D	83	27	12.0	52	62

The difference beween *P*- and *R*-techniques may be seen by reference to Table 1. In *R*-technique the numerator of the coefficient of correlation is the product of the measures of height (Ht) and weight (Wt) summed over the subjects in the sample, whereas in *P*-technique the numerator is the product of the same measures summed over the ages.

Units of Measurement

Many statements about the "unity of growth" or about relationships among the growth processes are in reality somewhat ambiguous. The term growth may refer to measures of *status* in some characteristic, or to measures of *increment* during a given time, that is, to *rate* of change in status. The usual tendency is for measures of physical status to increase from age to age during childhood and adolescence; it is, for example, almost certain that height will be greater at an older than at a younger age. Weight also tends to increase with age, during the growth period, although there may be rather marked irregularities in increments in weight during successive intervals of time, and an individual may show an actual decrease in body weight from an earlier to a later age.

Correlations (*P*-technique) between measures of status for those characteristics that increase with age will tend to approximate unity, even though the rates of change may vary considerably from period to period. It seems appropriate, therefore, to inquire into the nature of the relationship among the *rates* of growth in various physical or psychological characteristics. Shuttleworth (5) observed that little attention had been paid to the developmental features of longitudinal data, and remarked further that the emphasis in the analysis of such data should stress growth increments rather than gross dimensions. Stolz and Stolz (8) also believed that they would obtain more useful information from studies of velocity as compared with measures of status.

An example of longitudinal data for the study of intra-individual growth by the *P*-technique is presented in Table 2. Measures of status in height and weight are in columns 2 and 3, and measures of rate of growth are in columns 7 and 8.

TABLE 2

DATA FOR CALCULATING *r* AND *rho*, *P*-TECHNIQUE

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
								Rank Order	
T (CA)	Wt	Ht	ΔT	ΔWt	ΔHt	ΔWt/ΔT	ΔHt/ΔT	ΔWt/ΔT	ΔHt/ΔT
10.9	276	1313							
11.6	294	1332	.7	18	19	26	27	10	10
11.9	307	1350	.3	13	18	43	60	8	6
12.5	321	1382	.6	14	32	23	53	11	7
13.0	344	1402	.5	23	20	46	40	7	8
13.5	385	1445	.5	41	43	82	86	2	2
14.0	415	1485	.5	30	40	60	80	4	3
14.5	451	1535	.5	36	50	72	100	3	1
15.0	550	1571	.5	99	36	198	72	1	4
15.5	514	1588	.5	—36	17	—72	34	14	9
15.9	533	1614	.4	19	26	48	65	6	5
16.5	566	1618	.6	33	4	55	7	5	14
17.0	566	1623	.5	0	5	0	10	13	12
17.5	575	1631	.5	9	8	18	16	12	11
18.0	589	1635	.5	14	4	28	8	9	13

Two steps were involved in the calculation of the figures of column 7. The difference between the subject's weights at each two successive ages was determined (ΔWt—column 5), and was divided by the intervals between the two corresponding ages (ΔT—column 4). The quotient (ΔWt/ΔT—column 7) is the computed annual rate of growth at the mid-point of the interval for which the increment in weight was determined. It should be observed that linearity of the growth curve between successive measurements was assumed for these calculations. This assumption should not be too seriously in error since the intervals tended to be of short duration, approximately six months. Data for height are in columns 3, 6 and 8.

Coefficients of correlation may be computed between the data of columns 2 and 3, or of 7 and 8. The former shows the relationship between measures of height and weight for the sampling of ages in column 1, and the latter, the relationship between estimates of the annual rate of change for the sampling of ages (the midpoints of successive intervals over which the gains were determined).

The Coefficient of Correlation

The determination of a measure of relationship for longitudinal growth data requires another decision relative to the method of computing the coefficient. Pearson's product-moment coefficient of correlation is the most reliable measure of relationship. However, it may often happen that only a small sample of ages within the individual are available. Some other measure might be appropriate, as for instance Spearman's *rho*, or tetrachoric *r* for which the dichotomy is at the median measure. For comparative purposes, Pearsonian coefficients were computed from columns 7 and 8, and *rhos* from columns 9 and 10 wherein the estimated annual rates of change of columns 7 and 8 were ranked. The ages do not constitute random samples since the examinations were held at fairly regular intervals during adolescence (7). Furthermore, increments may not be normally distributed (9).

Factor Analysis

The nature of a factor analysis of correlations among rates of physical growth will be illustrated from the data of one member of the Adolescent Growth Study. The twelve physical measures that were selected, namely, weight, chest depth, and thigh, arm, chest and leg circumference; height, stem length, and biacromial and bi-iliac width; and strength of grip of the right and left hands may be grouped into three large categories, namely, ponderal (body size), skeletal, and strength. Pearsonian *r*'s among these twelve measures were computed from data arranged as in columns 7 and 8 of Table 2, while *rho*'s were obtained after arranging the data as in columns 9 and 10. The two sets of intercorrelations are in Table 3, *rho*'s being above, and *r*'s below the diagonal.

TABLE 3

CORRELATIONS AMONG TWELVE PHYSICAL MEASURES

with *rho* above and *r* below the diagonal*

	Wt	TC	AC	CC	LC	CD	Ht	SL	BA	BI	RB	LG
Wt		52	53	13	53	—06	65	47	76	—14	17	19
TC	42		92	39	50	—27	24	—09	25	37	—11	12
AC	56	81		46	62	—08	32	—11	26	50	—05	14
CC	01	30	52		16	12	46	01	03	61	—35	—22
LC	52	30	52	18		38	32	02	50	14	12	—09
CD	—15	—51	—19	11	39		13	—07	27	36	15	—02
Ht	50	11	36	41	21	09		74	54	29	11	12
SL	50	04	08	03	07	—12	74		46	—07	31	15
BA	45	03	28	13	40	25	54	56		02	45	49
BI	—11	47	50	63	14	24	27	00	03		—01	25
RG	22	—03	10	—32	09	06	15	22	36	03		70
LG	—10	06	15	—21	—13	05	05	—01	34	24	77	

* See Table 4 for abbreviations.

The first factor for each matrix was next extracted by means of Thurstone's complete centroid method. Typically, the diagonal entry in this method is the value of the largest coefficient of correlation in the column. However, other values may be used, such as unity or the reliability coefficient. The matrices obtained by both *r* and *rho* were factored twice, first using the largest correlation and then unity as the diagonal entry. It was believed that use of the latter would tend to maximize the variance related to the common factor, and thus facilitate the appearance of a common factor if one should exist in these particular measures.

It is at once apparent that there is a marked similarity among the four sets of factor loadings reported in Table 4. There is no generally accepted method of determining the significance of a factor loading. However, since loadings are in the nature of coefficients of correlation it has been suggested (2) that their significance can be approximated by treating them as coefficients of correlation. For 12 degrees of freedom Pearsonian *r* must be .55 to be significant at the .05 level. Accepting this criterion it is seen that the interpretation is the same for the two analyses of the *rho*'s. There are two minor differences between the results of the analyses of Pearson *r*'s, one loading changing from .54 to .59, and one from .52 to .55. The interpretation of the analysis of the *rho*'s is really very similar to that from the factorization of the product-moment correlations.

If the first factor is a general factor, then we should expect that each of the physical growth characteristics considered in Table 2 would have

TABLE 4

COMPARISON OF FIRST FACTOR LOADINGS FROM EACH OF FOUR METHODS

		Spearman's *rho*		Pearson's *r*	
		Diagonal Entry r	*Diagonal Entry 1.00*	*Diagonal Entry r*	*Diagonal Entry 1.00*
Weight	(Wt)	72	72	57	61
Thigh Circumference	(TC)	60	58	47	48
Arm Circumference	(AC)	70	68	76	75
Chest Circumference	(CC)	36	43	41	44
Leg Circumference	(LC)	61	64	54	59
Chest Depth	(CD)	20	29	12	19
Height	(Ht)	74	75	70	71
Stem Length	(SL)	41	43	48	50
Biacromial	(BA)	76	76	66	70
Bi-iliac	(BI)	46	50	52	55
Right Grip	(RG)	35	38	41	42
Left Grip	(LG)	40	43	33	35

a significant loading on that factor. Although all the loadings are positive, only six of the twelve are significant. Four of these (weight, and thigh, arm, and leg circumference) are related to tissue mass; the other two (height and biacromial diameter) are skeletal. It is concluded that within this particular subject there is not a general factor, or a high degree of unity, in the rates of growth of the twelve characteristics listed in Table 4. This conclusion is probably all the more significant when it is remembered that the correlations were based upon measures obtained during adolescence. At the end of this period we could expect to find little increase in many of the characteristics so that they would have similar rank orders simply by reason of the fact that the boy was approaching adult status in many of these characteristics, especially those of a skeletal nature. This might be somewhat less true in the case of ponderal characteristics.

Second and Third Factors

Three factors were extracted from the matrix of *rho*'s; the largest correlation in the column was used as the diagonal entry. The loadings are presented in Table 5.

There is a tendency for both the second and third factors to be bipolar. However, only one loading in each of these factors exceeds the value of .55

TABLE 5

FIRST THREE FACTORS FROM *rho's* WITH THE LARGEST COLUMNAR CORRELATION AS THE DIAGONAL ENTRY

	I	*II*	*III*
Wt	72	—28	—50
TC	60	43	—48
AC	70	54	—35
CC	36	51	25
LC	61	28	—33
CD	20	13	32
Ht	74	—22	21
SL	41	—59	19
BA	76	—40	—14
BI	46	52	58
RG	35	—52	18
LG	40	—41	14

which has been proposed as the lower limit for significance. Such trend as there is seems to signify that the second factor might be regarded as one of width as contrasted to one of height.

SUMMARY AND CONCLUDING REMARKS

The correlations (*P*-technique) among the estimated rates of growth for twelve physical characteristics in a boy between the ages of 10.9 and 18.0 years were computed by means of both the product-moment and Spearman's rank difference formulas. The variables correlated were measures of physical growth, while the sample (corresponding to the subjects in the more traditional coefficient of correlation) was one of 14 ages in the adolescent years.

The first factor was extracted from each correlation matrix with Thurstone's complete centroid method. Four sets of factor loadings were obtained by using two different estimates for the diagonal entries of each correlation matrix. Both the largest coefficient in a column and unity were used as the estimates of the communality.

The first factor patterns that were obtained from the different estimates of communality were very similar to each other. In this particular adolescent boy, it appeared that only six of the twelve physical characteristics had significant loadings (at least .55) on factor I, which was interpreted as general body size.

It is believed that the *P*-technique offers a valuable tool for investigations into the nature of intra-individual growth. However, as Cattell (4, p. 102) has pointed out, the results found by a single study involving *P*-technique can be understood only in the light of a whole series of *P*-technique investigations, and possibly also in terms of the results of *R*- technique researches. Several such studies are currently in progress at the Institute of Child Welfare of the University of California, Berkeley.

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ATTITUDES OF GRANDMOTHERS AND MOTHERS TOWARD CHILD REARING PRACTICES

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A review of the literature on adult-child relationships reveals that little consideration has been given to the grandmother as a member of the immediate family group. References to grandparents are for the most part general in nature and based on clinical evidence. Gesell and Ilg (3) call attention to the numerous hazards of grandparent interference with parental control. Vollmer (8) observes that grandmothers possess unbending and didactic opinions concerning child care and an unwillingness to recognize the process of maturation. According to Thompson (7) grandparents and parents frequently have sufficiently differing views on what constitutes desirable child behavior to create conflicts for the children.

The practices advocated as best for child rearing have changed considerably during the past several decades. Extensive surveys of such publications have been made by Langdon and Stout (5) and by Stendler (6) showing that there has been a steady trend from a standard of strict authoritarian control toward one characterized by permissiveness, with accepted basic principles of respect for the individual, his maturity and his needs.

The present study was undertaken to test the hypothesis that the attitudes of grandmothers and mothers of the present generation of children differ in respect to child rearing practices, and that grandmothers are more strict and authoritative than mothers. A further purpose was to determine whether the degree of strictness—permissiveness in both grandmothers and mothers is influenced by: (*a*) the grandmother's place of residence (i.e., in her own home or in the home with her children and grandchildren), (*b*) the amount of education, (*c*) the age of assuming motherhood, and (*d*) the number of children in the family.

PROCEDURE

Of the several scales that have been constructed for quantitative measurement of adult attitudes toward child behavior, a recent one by Wiley (9) was selected for use. This scale has been shown to differentiate reliably

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between attitudes of persons who have had classroom instruction in child development or counseling in children's problems and those who have not been exposed to such information. Mean scores for a group of "experts" or "specialists" in child behavior are available. Moreover it is divided into eight subscales representing a wide range of areas in child rearing practices as follows:

1. *General home standards*—neatness and orderliness expected of children, freedom allowed in choice of activities, the type, frequency and purpose of punishment.
2. *Verbal standards*—opportunity the child has to speak freely, correction of speech errors.
3. *Expression of hostility*—extent to which this is allowed both verbally and otherwise, toward adults, other children and objects.
4. *Weaning, feeding and thumbsucking*—techniques for weaning, desirability of breast feeding, establishing food habits, treatment of thumbsucking.
5. *Toilet training*—when to begin, standards for accomplishment, techniques for training, attitudes toward eliminative functions.
6. *Sexual behavior*—imparting sex information, attitudes toward sex.
7. *Boy-girl differences*—differences in standards and methods for rearing boys and girls, including cleanliness, affection and aggression.
8. *Crying*—causes; parental response to children's crying.

In the revised form used in the present study, the scale consists of 98 statements each followed by a choice of the responses "strongly agree," "agree," "undecided," "disagree," and "strongly disagree." Scoring weights of one to five are assigned to these responses, the lower figure indicating the more permissive and the higher the more strict, authoritative and punitive attitudes. Possible scores on the total scale range from 98 to 490.

The subjects were 87 grandmother-mother pairs, all from middle-class families and residents of the same midwestern city of 100,000 population. Included were both paternal and maternal grandmothers, each paired with a daughter and/or daughter-in-law who was the mother of at least one child 12 years of age or under. Of the group, 42 pairs lived together in the same home while each member of the remaining 45 pairs lived in a separate household.

Each subject was interviewed in the home and was asked, after preliminary instructions, to complete the attitude scale in the presence of the investigator. Care was exercised to prevent any discussion or comments concerning the scale until both members of a pair had completed the interview.

RESULTS

Comparison of Grandmother-Mother Groups

The total scores on the attitude scale for the grandmothers ranged from 200 to 383 with a mean of 309.65 compared with the mothers' range of

156 to 344 and mean of 264.05. The *t* test for matched groups was used to determine whether these were real population differences, grandmothers being paired with their specific daughters and/or daughters-in-law. With 86 degrees of freedom, the obtained *t* value of 10.79 is very significant at the one per cent level of confidence, indicating that the grandmothers as a group have the more strict, authoritative and punitive attitudes toward child rearing while the mothers are much more permissive in their ideas of adult control of children. This confirms the initial hypothesis. Neither group is as permissive as the group of specialists reported by Wiley (mean score 163.7).

TABLE I

COMPARISON OF GRANDMOTHERS AND OF MOTHERS ON BASIS OF GRANDMOTHERS' RESIDENCE

Groups	*N*†	*Mean*	*t*
Grandmothers			
Living with grandchildren	42	318.76	2.540*
Living in own home	44	300.82	
Mothers			
Three generation home	41	273.88	2.647**
Two generation home	38	253.63	

† The variances in *N* for the groups is due to the fact that in the case of nine mothers, scores were obtained for both maternal and paternal grandmothers, and for one grandmother scores for both daughter and daughter-in-law.

* Significant at five per cent level.

** Significant at one per cent level.

Influence of Grandmothers' Place of Residence

The scores were next analyzed on the basis of the grandmothers' place of residence and are summarized in Table 1. Grandmothers living in the home with their grandchildren have a mean score of 318.76 as compared with that of 300.82 for grandmothers maintaining their own homes. Utilizing the *t* test of significance for unmatched groups, this difference proved to be significant at the five per cent level of confidence. This gives evidence of the more permissive attitude for the grandmothers who live apart from their children and grandchildren.

The mean scores of the mothers were then compared on the basis of the presence or absence of the grandmother in the family home, and a difference similar to that of the grandmothers in strictness–permissiveness is noted. When the three generations live together the mothers have the higher or more strict mean score of 273.88 as compared with the more permissive mean of 253.63 for mothers in two generation households. The obtained t value is significant at the one per cent level of confidence.

Areas Within the Structure of the Scale

In order to determine whether the differences in attitudes were general or limited to specific aspects of child rearing, an analysis of the subscales was made. The grandmothers were compared with the mothers according to their mean scores for each of the eight areas of child care. Table 2 presents this comparison for the grandmother-mother pairs who shared the same home, and Table 3 for the pairs where the grandmother maintained a separate residence. Under both types of living arrangements, the grandmothers' scores are higher than the mothers' on each of the subscales, and all t values are significant at one per cent level. These findings give further support to the initial hypothesis and we can conclude that grandmothers consistently hold more strict and authoritative attitudes than do mothers in all of the aspects of the rearing of children measured by the scale.

From a comparison of Tables 2 and 3, it will be noted that the scores of the grandmothers who maintain their own homes are consistently lower or more permissive than those of the grandmothers who live with the grandchildren. This difference, when subjected to the t test, proved to be significant in only four areas: *verbal standards; expression of hostility; weaning, feeding and thumbsucking;* and *differences in rearing boys and*

TABLE 2

MEAN SCORES IN THE DIFFERENT AREAS OF CHILD REARING WHEN THE GRANDMOTHER LIVES WITH THE FAMILY

($N = 42$ grandmother-mother pairs)

Subscales	Grandmother *Mean*	Mother *Mean*	t
General home standards	37.52	33.46	4.847**
Verbal standards	48.05	43.56	3.879**
Expression of hostility	47.93	41.10	5.281**
Feeding, thumbsucking	49.83	41.41	5.805**
Toilet training	44.17	37.37	6.800**
Sexual behavior	41.98	34.76	5.845**
Boy-girl differences	40.26	35.12	4.192**
Crying	9.22	7.10	4.125**

** Significant at one per cent level.

TABLE 3

MEAN SCORES IN THE DIFFERENT AREAS OF CHILD REARING WHEN THE GRANDMOTHER MAINTAINS A SEPARATE RESIDENCE

($N = 45$ grandmother-mother pairs)

Subscales	Grandmother *Mean*	Mother *Mean*	*t*
General home standards	35.66	31.58	7.242**
Verbal standards	45.36	39.64	4.297**
Expression of hostility	43.86	38.18	4.280**
Feeding, thumbsucking	46.00	38.08	6.225**
Toilet training	43.07	34.63	7.388**
Sexual behavior	41.50	32.50	6.705**
Boy-girl differences	37.14	32.26	4.516**
Crying	8.23	6.55	4.190**

** Significant at one per cent level.

girls. When the mothers' subscale scores are compared on the basis of the grandmothers' residence, all are lower or more permissive for the mothers in the two generation family than for those who have a grandmother living with them. These differences proved to be significant in the same four areas as did the scores of the grandmothers.

Relationship Between Attitudes of Mother and Grandmother Groups

In view of the group differences which have been found, the question of a possible relationship between individual scores arises, i.e., Is there any relationship between the attitudes toward child rearing of the particular grandmother and her daughter or daughter-in-law? To determine to what extent, if any, such a relationship exists a Pearson *r* was computed for the 87 pairs of scores and proved to be +.34, significant at the one per cent level of confidence. For further analysis of this positive correlation the group was divided into maternal and paternal grandmother-mother pairs. Considering the maternal grandmothers and their daughters, the obtained *r* of +.53 for the 28 pairs who lived apart is significant at the one per cent level, while for the 37 pairs who shared a home the *r* of +.15 proved insignificant. The paternal grandmothers and their daughters-in-law consisted of only 22 pairs who were treated as a group regardless of residence. The obtained *r* of —.01 was not significant.

Influence of Background Factors

Several factors were considered as possibly contributing to the attitudes of the subjects in regard to ways of dealing with children. Treating grandmothers and mothers separately, coefficients of correlation were computed between the total score on the scale and the number of years of formal education. For the grandmothers, whose years of schooling ranged from 4 to 17 years, an r of —.32 was obtained. The mothers' education varied from 8 to 18 years and the r proved to be —.36. Both coefficients of correlation were significant at the one per cent level. For this group of middle-class urban women, their permissiveness toward child care becomes more pronounced as the educational level increases.

With respect to age at birth of first child, the grandmothers varied from 17 to 44 years and the mothers from 18 to 39 years. When r's were calculated between this age and the score on the scale they were low and insignificant for both groups of subjects. The number of sons and daughters reared by the grandmothers ranged from one to nine, with an average of 4.4 per family. The groups of mothers had an average of 2.0 children, with a range of one to seven. No relationship appeared between the degree of permissiveness–strictness and the number of children for either the mothers or grandmothers.

Discussion

Several explanations may be offered for the lack of correlation between the attitudes of mother-daughter pairs when they live together, and for the greater strictness of both grandmothers and mothers in the three generation homes. It is possible that tension-producing situations are created by this mutual living arrangement which affect the relationships involving the children. Blood (1) found that the consequences of a permissive policy with young children are in conflict with the ideals of a well ordered middle-class home. Fried and Stern (2) report that the larger proportion of older people dislike the idea of living in the home with their offspring and do not feel that they have a function to fulfill within the framework of a three generation home. Havighurst (4) states that, in middle-class families, unresolved parent-child conflicts are often reactivated when the two adult generations try to live together. It is possible that a selective factor affected the results of the present study in that people with the more traditionally oriented concepts of family life may be more apt to participate in three generation home living.

Summary

By means of an attitude scale and personal interview, 87 grandmother-mother pairs who lived in the same urban community were studied with respect to their ideas concerning child rearing. The grandmothers proved to be more strict than the mothers, this difference being evident in all areas of child care. When the grandmothers lived in their own homes,

both the grandmother and the mother were more permissive than the pairs who lived in the same household. The attitudes of maternal grandmothers and their daughters were significantly correlated when the two resided apart, but no relationship was demonstrated for those who lived together nor for paternal grandmothers and their daughters-in-law. The degree of permissiveness of both generations bears a positive relationship to the number of years of formal education.

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CONCEPT OF MOTHER—A STUDY OF FOUR- AND FIVE-YEAR-OLD CHILDREN

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It is the purpose of this article to present a study of the development of the concept of *mother*. Thirty-six children served as subjects. Eighteen were, before December 31, 1952, prekindergarten children four years of age, while eighteen were kindergarten children of five years. Fathers of the children were business men, merchants, lawyers, doctors and teachers, whose income ranged from $3,000 to around $9,000. Of the mothers, only four of the thirty-six held positions outside of the home.

METHOD AND PROCEDURE

The study ran along two channels, oral expression and drawings.

1. In the *oral* study the child was interviewed by himself. The first phase opened with the formula: "I want to know your mothers better, so all the boys and girls are telling me about them. You tell me about your mother." If the child, after this statement and an encouraging smile, did not open the conversation he was urged by: "Tell me what she looks like." If this brought merely "I don't know," then, as a last resort, the teacher opened with "Tell me what she does." Everyone who had not described his mother in response to one or the other of the first two techniques responded to the last. Limiting herself strictly to an encouraging smile and the question "Anything else?," the teacher recorded what the child said, as he said it. After he had finished telling all he thought, the teacher then asked for the mother's name, age, size, color of eyes and hair. Responses to these questions likewise were recorded as they were given by the child.

The second phase of the study of oral expression consisted of asking the child on successive days five questions:

1. Suppose that your mother and father could not both take you to the circus. Which would you want to take you?
2. Suppose you wake up in the night with a pain. Whom do you call to take care of you?
3. Suppose you need a new pair of shoes. Who will take you to get them?
4. Suppose you are going on a picnic with your family. Tell me who will go?
5. Name all the people who live in your house.

Again the teacher recorded the responses of the child as he gave them.

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2. The *drawing* study: A pilot study of the drawing technique for eliciting the concept of *mother* was conducted to determine, for example, whether the child should use several colors or one color, how this one should be selected, the desirable number of drawings of the mother and in what situation, and the precise instructions to be given to the child. On the basis of this pilot study it was decided that the procedure, illustrated by the instructions that follow, was indicated:

> 1. (Tuesday) Today you are going to draw a picture of your mother. She may be doing anything that you wish. You may select any color you wish but only one at a time. Draw the best picture you can.
> 2. (Wednesday) Today you are going to draw a picture of your mother and yourself. You may be doing anything you wish. You may select any color you wish but only one at a time. Draw the best picture you can.
> 3. (Thursday) Today you are going to draw a picture of your mother and father. They may be doing anything you wish. You may select any color you wish but only one at a time. Draw the best picture you can.
> 4. (Friday) Today you are going to draw a picture of your family. You may be doing anything you wish. You may select any color you wish but only one at a time. Draw the best picture you can.
> 5. (Tuesday) Today you are going to draw a picture of your mother, your father and yourself. You may be doing anything you wish. You may select any color you wish but only one at a time. Draw the best picture you can.

The drawings were analyzed by two different individuals for the following points:

1. *Colors* used in drawing the mother.
2. The *size* of the drawing of the mother (as compared with that of the father and child).
3. The *position* of the drawing of the mother (in relation to that of the father and child).
4. The activities in which the mother is engaged.
5. The score (according to the Goodenough Drawing Scale) for the mother, father and child.
6. The color used for the hair of the mother, father and child.
7. The style of hair depicted for the mother, father and child.
8. The style of clothing depicted for mother, father and child.

FINDINGS: THE CONCEPT OF MOTHER AS FOUND IN ORAL EXPRESSION

Of the ninety responses all but seven portray her in some activity. Eighty-three of the ninety responses indicate that to these four- and five-year-olds mother is an *active person within the home*—cleaning, washing, ironing, cooking, washing dishes, sewing, and cleaning the yard. To four of the children mother works at school, the store or the office. Of the ninety activities only nine were recreational in nature. Mother is a working mother keeping the home running.

Replies to the Questions Calling for Specific Information— Name, Age, Color of Eyes and Hair, and Size

Nineteen of the twenty five-year-olds knew their mother's first name. The one who did not know her first name knew her as "Mrs. S——." But only nine of the sixteen four-year-olds knew the first name. Three knew her as "mother" or "mamma," while three knew her as "Mrs. ——."

The meaning of the word "mother" becomes richer and more definite as the child matures. The person who started out as mother (the child-mother relationship) becomes Mrs. —— (the family relationship) and in due time Joyce—who has an individuality apart from the inner circle of the family. At this stage in his development the child is beginning to realize that his mother has a personal name as well as the relationship name; it is a vague idea at first and a bewildering one. One child expressed it, "Some people call her 'Adenia,' some people call her 'Mrs. Smith' but her real name is just 'mother'."

When asked the ages of their mothers, only five of the children's thirty-six responses were accurate. Fifteen frankly said, "I don't know"; the number who guessed, guessed a few years beyond their own ages. They knew the age of a sibling but not that of their mother.. (To the four- and five-year-old, age is not yet associated with mother.)

The five-year-old has a more accurate concept of the color of the eyes than does the four-year-old. Of the five-year-old group all but three were accurate regarding eye color of the mother. Of the four-year-olds only three were correct. (Black, white and green were mentioned.)

The four- and five-year-olds alike picture their mothers with dark hair—black and brown. One said her mother's hair was "gold"—it is dark brown. A red-headed boy gave his mother's as "red," although it is really jet black. One child who might have said "golden yellow" said "brown."

Responses to "How tall or how big is your mother?" proved almost impossible to record. Ten children raised their hands high endeavoring to show by that method. Eight let it go with "big," "big as you," or "big as daddy." Eight frankly stated that they did not know. To most of them she was someone larger than themselves. Of the group, only two compared her height with that of the father, yet in their drawings they distinctly made her taller, the same, or shorter than the father. (They portray a better comparative knowledge than they express in verbal vocabulary.)

Responses to the Five Questions

These four- and five-year-old children used three different words for *mother*: "mother," "mamma" and "mammy." They also used three for *father*: "father," "daddy" and "dad." The word "mother" is used as many times as "mamma" and "mammy" together, showing that "mother" is the preferred word. On the other hand, "father" and "daddy" are used almost equally.

"My" is found before the words "mother," "mamma" and "mammy" forty-three times, more than half the times these terms were used in answer to the first three questions. Likewise the same possessive pronoun is found in front of the words "father," "daddy" and "dad," two-thirds of the times these words appear in the answers to the first three questions. Thus these four- and five-year-olds have a strong tendency to think of mothers and fathers as their very own, not those of another child.

The four- and five-year-old child looks to his mother rather than to his father for recreation, clothing and aid in times of pain in the ratio of two to one. It was noted that the five-year-old *girls* chose their mothers in a ratio of two to one. On the other hand the five-year-old *boys* chose their mothers in the ratio of eight to seven, and the four-year-old boys chose their mothers in the ratio of two to one.

Regarding the last two questions it is found that both four- and five-year-olds mentioned father first as many times as they do mother.

FINDINGS: THE CONCEPT OF MOTHER AS EXPRESSED IN DRAWINGS

Different Colors Used in Drawing the Mother

In the pilot study the child first selected a color, then was told what to draw. The colors most often selected were red and blue (proportion 1:3) and green. Those least often were black and brown (proportion 1:86).

Using the proportions found in the pilot study as a basis for evaluation, final results show that:

1. The choice of red in proportion to the total (1:4) remains constant no matter with whom the mother is grouped.

2. In the pilot study the ratio for purple to the whole was 1:17; in the study it is 1:16 but, unlike red, it varies with the picture. When mother is drawn *alone* it reaches the high proportion of 1:5, but when she is drawn with the child or with the father and the child it drops to 1:35 and 1:30.

3. When the child draws the mother *alone* he does not choose yellow as often (1:21) as when he associates her with another member of the family (1:9). He chooses it most often when he places her in the midst of the family.

4. The choice of blue when drawing mother *alone* is 1:5 but when father is added the proportion drops to 1:15.

5. When the mother is drawn alone she is usually red, purple or blue, but when she is surrounded by her family she is red and yellow.

Colors Used in Making the Hair of the Mother

There were eleven opportunities for drawing hair: five for the mother, three for the father and three for the child, making a total of 396. Had each of the five-year-olds drawn hair on all eleven characters there would have been 198; there were 160. The failure to draw hair, in a number of cases, was because the character itself was not drawn. In most cases this was the father. Four-fifths of the drawings made by the five-year-olds have hair in varying colors, while less than half (84 of 196) of the drawings of the four-year-olds have hair.

In the pilot study the proportion was 1:86 for black and brown, but in the second study black became 1:7 and brown 1:9. The proportion for choice of black by the four-year-olds in portraying hair was 1:26 and that for brown was 1:77. Five-year-olds were much more realistic in their drawings, for the proportion jumped to 1:3. Apparently the child at five distinguishes hair color as different from the color of the face or clothing. This is further emphasized by the fact that the four-year-olds use red for hair color in the proportion of 1:2, while the five-year-olds drop it to 1:14.

In summary it may be stated:

1. When the five-year-old selects colors for color's sake he chooses black and brown to the ratio of 1:86, but when using colors to portray the hair of his mother, family and himself he selects brown 1:9 and black 1:7.

2. The five-year-old is far more realistic in portraying the hair than the four-year-old. More older children add hair, and more attempt to use the correct color.

Scores Received on the Drawings of Mother Compared with the Scores Received on the Drawings of Father and Child

The drawings were scored by two individuals according to the Goodenough Drawing Scale. The majority of mother drawings received higher scores than the drawings of the father and child. Mother drawings outweighed father 2:1, the child 5:1. The child took greater care with the drawing of the mother; as an example, the arms, hands or feet often were lacking in the drawing of the father or child.

Size (Length) of the Drawings of the Mother Compared with Those of the Father and the Child

From the data it was evident that:

1. The child thinks of his mother as taller than himself. Out of ninety-three drawings of the mother and child, seventy-eight made the drawing of the mother longer than the drawing of himself. In only ten drawings was she made the same size and in only five was she made shorter.

2. Of the ninety-two drawings of the mother and father it was noted that thirty represented the mother taller, twenty-three the same height, while thirty-nine, more than a third, shorter than father.

In summary it may be said that the child sees his mother as a person taller than himself and a little shorter than his father.

Style of Hair Depicted for the Mother, Father and Child

Upon checking the style of arrangement it was discovered that it might be classified under four categories: (*a*) the hair (straight or curly) drawn on three sides of the face; (*b*) the hair arranged on top of the head; (*c*) the hair standing out like pins in a pincushion; and (*d*) the hair on only two sides of the face, representing a bald head. The significant facts here are:

1. One-third of the drawings having hair style were drawn by boys and the remaining two-thirds by girls. This difference in number is not entirely due to the fact that many of the girls are older than the boys, for the younger girls also represent hair.

2. According to the arrangement of hair portrayed by these children the boy sees his mother, and girl sees her mother (and herself), as having hair on three sides of the face. Five-sixths of the drawings of the mother, and four-fifths of the drawings of the girls were thus portrayed.

3. Both boys and girls see father as having short hair. Three-fifths of the drawings had style (*b*), hair on top of the head. It is of interest to note that those who portrayed the child as having style (*b*) were boys.

4. It appears to be an individual matter that the child thinks of mother as having straight or curly hair; not so the father, for nine times as many drawings portray him having straight hair.

In conclusion it may be said that the child thinks of his mother as having either curly or straight hair on three sides of her face, in contrast to the father who has straight hair on top of his head.

Style of Clothing Depicted for Mother, Father and Child

In order to make a comparative study of the type of clothing all five drawings of mother, three of the child and three of the father are used. It became evident that most of the clothing representations might be grouped into four categories: A waist and skirt on the mother or child; shirt and pants on male figures; a round body with a triangular skirt; and a triangular dress which had its most acute angle at the neck. Aside from these representations thirty-eight drawings showed only the head, with its features, and the body with arms and legs. Forty drawings had only the arms and legs dangling from it.

Position of the Mother in Relation to the Father and the Child

There were thirty-four drawings of the family and seventy-six of mother-father-child, making a total of one hundred ten. Analyzing these drawings of the family it was found that: (1) four of the thirty-four omitted the father, (2) four of sixteen omitted the sibling, (3) six of fifteen omitted one of several siblings, and (4) no one omitted the mother; she was always included.

Analyzing the data it was found that there are three positions: (1) mother occupying the center, (2) father occupying the center and (3) the child occupying the center. There are two times in which a sibling entered the picture between the child and the mother.

Almost half of the pictures portrayed the mother in the center of the family. Less than a third portrayed the father as the center, and less than a third portrayed the child as the center of the family. At this age the child characteristically pictures himself near or next to the mother. This was true for 77 of the 110 pictures. It may therefore be stated that the four- and five-year-old child most often places his mother in the center of the family and himself next to her.

Activities of the Mother as Portrayed in the Drawings

"Today you are going to draw a picture of your mother. She may be doing anything you wish." This was the statement made to the children on the first day, and the others differed from it only in the personalities to be drawn. Upon finishing the drawing the child brought it to the teacher, at which time the teacher said, "Tell me what is she doing." The child's response was then written on the sheet containing the drawing. This same general procedure was followed with each drawing.

Of 157 activities, fifty-five are located in the home. Listed in their order of frequency they are: washing dishes (11), cooking (10), washing (9), hanging up clothes (5), working (6), cleaning (4), building (2), making beds (2), painting (2), gardening (2), giving me a bath (1), and putting me to bed (1). Mother, to these children, is someone actively engaged in the home.

But the drawings portray a mother with a far wider range of activities. Mother is on the go: walking to town, to the store, to school, etc. Not only does she go, but she has time for recreation. Mothers enjoy eighteen different kinds of recreation: looking for birds, picking flowers, camping out, going to the fair, parties, movies, dancing, visiting, giving presents, watching dad, etc. Again and again come intimate home pictures: putting me to bed, bathing me, giving me a present, loving me, looking after daddy. Mother means more than just someone who runs the home.

SUMMARY AND CONCLUSIONS

A study of the development of the concept of "mother" was made of the oral responses and 234 drawings of "mother" made by eighteen four-year-olds and eighteen five-year-olds at University School.

1. From their oral expressions and from their drawings, mother is that very active person who keeps the home running—cooking, cleaning and washing dishes. The drawings portray a wider range of activities of a recreational nature and of intimate home life. Mother is one who cares for them and comes to their aid in times of stress.

2. The physical appearance of mother is not clear or definite; she has eyes (when asked about them) but not of a particular color. She has hair (when asked about it); according to the drawings it is either straight or

curly, growing on three sides of the face. Most four-year-olds use the same color for hair as they do for the rest of the figure; the five-year-olds go to the trouble of selecting another color, mostly black or brown. She has clothes, but only two of the thirty-four children mention them in the oral expression. Very few of the four-year-olds distinguish mother from father. The five-year-olds discriminate between sexes by drawing the triangular skirt rather than pants. Mother has size, but it is relative—shorter than father, taller than themselves. She has age, but when asked about it half say they do not know how old she is, and half of the remainder give it as ten years or younger. In other words, time is not associated with mother at this age.

3. The word "mother" is beginning to take on a universal connotation. It has two synonyms: "mamma" and "mammy," but they are not as popular as the word "mother." The five-year-olds start using "my" to distinguish their mother from those of the other children. Many of the five-year-olds have come to know that "my" mother is Mrs. ——, and that she has a first name which daddy and the people outside of the family call her.

4. When four- and five-year-olds select colors for drawing mother alone they select red, blue and purple; but when she is one of the family she is either red or yellow.

5. Mother is placed most often in the center of the family with the four- and five-year-old child next to her.

COLOR USAGE IN NURSERY SCHOOL PAINTING

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In recent years investigators have given attention to the possibility that the use of color may provide clues to the personal and social adjustment of young children (1, 3, 5). Studies of this type have been devoted mainly to two kinds of activities, finger painting and easel painting. The methods used in these investigations have a common element in that the subject is confronted at the outset of the experiment with several colors from which he chooses one with which to begin his activity. Either this first choice or the amount of various colors in the completed work constitutes the data to be gathered. The validity of any conclusions and the value of any inferences that are drawn from data relating to the initial choice of color made by young children is dependent upon whether these first choices are free from influences of one kind or another.

Among the influences which might possibly affect the first choice of color used by nursery school children in their paintings is the order in which the colors are arranged for the child to use. Especially among preschool children the possibility is suggested that the initial color chosen by them to begin a painting may not be as much a function of choice as it is a result of the arrangement of colors presented to them. Smith (6) found that the color which was placed on the right was selected first more than 50 per cent of the time. Staples and Conley (7), in addition to Smith, noted that nursery school children frequently used color in the exact order of presentation. If this were a significant aspect of the painting behavior of the child it could possibly mean that the element of choice is largely absent in painting at some levels of development.

The present study was designed to investigate the extent to which first choices made by nursery school children in painting were influenced by the arrangement of the colors with which they were presented. A second purpose of this investigation was to examine the frequency with which three-year-old children made use of colors in sequential order.

HYPOTHESES

The central postulates to be tested in this investigation were:

1. *The order of use of color by nursery school children in their easel paintings is influenced by the arrangement of colors in the easel trough.* To support this hypothesis it would be expected that colors on the extreme

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left and right of the trough would be used first more than any other color. It would also be expected that children who use their right hand when painting would begin painting with the extreme right hand color more than any other color.

2. *Three-year-old children use colors in the sequential order of their arrangement to a significant extent.* Chi Square analysis was to be applied to determine whether the frequency of this occurrence attained the five per cent level of significance.

EXPERIMENTAL DESIGN

Twenty children, ten boys and ten girls, attending the Nursery School of the Home Economics School of the Pennsylvania State University were the subjects in this study.[1] These children ranged in age from three years to three years and ten months. The experiment was conducted between the hours of 9:00 A.M. and 11:00 A.M. over a period of four weeks. Each child painted twice, each time with a different arrangement of colors.

One double easel was set up in the painting area of the nursery school room. Four jars of tempera paint, mixed fresh daily, were placed in the four compartments on each side of the easel. Care was taken to achieve a like consistency among the four colors. The jars of paint were located in the compartments so as to be equal distances apart.

A new ⅜ inch bristle brush was placed in each jar so that the handles of the brushes projected upward toward the child at an angle of 180 degrees rotation from the side of the jar which was tangent to the easel surface. Brushes and jars were wiped clean when each painting had been completed and were then relocated in the original way for each trial.

The colors were arranged in random order for phase one of the experiment. In order from left to right were: red, yellow, blue, and black. For phase two of the experiment, the positions of the colors were interchanged so that the colors which had been at the ends of the trough were substituted for those that had been in the center. The order of colors for phase two, from left to right, was: blue, black, red, and yellow.

Each subject was invited to paint but was not compelled to paint if the activity did not interest him at that particular moment. In the course of the experiment nineteen children painted twice. Each of these children made one painting under the conditions of phase one and one painting under the conditions of phase two.

A chart was prepared which contained the name of each child and two columns which were headed by the order of colors for each phase of the experiment. As the child proceeded to paint, the observer scored 1, 2, 3, 4 to indicate the order in which the colors were used.

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[1] This number was reduced to 19 since one girl did not choose to paint during the course of the experiment.

TABLE 1

SUMMARY OF COLORS USED FIRST IN EASEL PAINTINGS OF 19 NURSERY SCHOOL CHILDREN

	Phase One				Phase Two			
	Red	*Yellow*	*Blue*	*Black*	*Blue*	*Black*	*Red*	*Yellow*
Frequency .	5	2	5	7	3	3	5	8
Per Cent . . .	26	10	26	37	16	16	26	44
z				0.9				1.52

RESULTS

The number of first choices for each color during both phases of the experiment is shown in Table 1. In phase one, black (the right hand color) ranked first with a percentage of first choices amounting to 37 per cent. In phase two, when yellow was the right hand color, it was used first 44 per cent of the time. A z test (2) of significance ($z = [X - M] / \sigma$) showed that the null hypothesis could not be rejected at the 5 per cent level of confidence. The value 1.52 indicated that the differences in the frequency of use of yellow over the other colors in phase two might be expected to have occurred by chance six or seven times in 100. The chance expectations from the value for black in phase one would be approximately 18 or 19 times in 100 trials.

When the first choices of both phases were combined and totaled, the distinctions among colors that were used first practically disappeared. Red, yellow, and black were used first equally often and blue was almost as often used first as the others. This is shown in Table 2.

The positions that were selected first irrespective of color are shown in Tables 3, 4, and 5. The extreme right hand position, *d*, was seen to have

TABLE 2

RANK ORDER OF COLORS USED FIRST BY NINETEEN CHILDREN IN TWO TRIALS

Rank	*Color*	*Frequency*	*Per Cent*
1	Red	10	26
1	Yellow	10	26
1	Black	10	26
4	Blue	8	22

been chosen 39 per cent of the time by all and 38 per cent of the time by right-handed children. When a test of significance was applied to the difference obtained between the choice of combined end positions and the choice of the combined intermediate positions it was found that this was not significant at the five per cent level of confidence. (A value of 1.98 is needed at this level). A tendency to choose the end positions was observed from the fact that they were chosen first 60 per cent of the time.

Twelve of the 19 subjects painted in the exact sequence of the presentation of the colors at least once on the two trials. Table 6 shows that in

TABLE 3

FREQUENCY OF POSITIONAL FIRST CHOICES IN 38 EASEL PAINTINGS OF NURSERY SCHOOL CHILDREN

	POSITION			
	a	*b*	*c*	*d*
Frequency	8	5	10	15
Per Cent				39
z				1.88

TABLE 4

POSITIONAL FIRST CHOICES IN 34 EASEL PAINTINGS OF RIGHT-HANDED NURSERY SCHOOL CHILDREN

	POSITION			
	a	*b*	*c*	*d*
Frequency	7	5	9	13
Per Cent				38

TABLE 5

FREQUENCY OF FIRST CHOICES OF END POSITIONS VS. INTERMEDIARY POSITIONS IN 38 EASEL PAINTINGS BY NURSERY SCHOOL CHILDREN

	POSITION	
	Ends	*Intermediaries*
Frequency	23	15
Per Cent	60	
z	1.14	

TABLE 6

FREQUENCY OF THE USE OF COLOR IN THE EXACT SEQUENTIAL ORDER OF PRESENTATION IN TWO EASEL PAINTINGS OF 19 NURSERY SCHOOL CHILDREN

Case	*Phase One*	*Phase Two*	*Both Phases*
1	x	x	xx
2	x	x	xx
3	x	x	xx
4			
5			
6	x		x
7	x	x	xx
8			
9			
10	x		x
11			
12	x		x
13			
14			
15	x		x
16		x	x
17		x	x
18		x	x
19		x	x
Total	8	8	16
Chi Square = 163 $P = < .001$			

each phase of the experiment, colors were used in the sequential order of their arrangement from left to right or from right to left eight times. The sequence *d*, *c*, *b*, *a*, or *a*, *b*, *c*, *d*, would be expected theoretically to occur by chance once in each 12 trials. In 38 trials it would be expected that the occurrence of the sequence would be observed in either direction 3 and 1/6 times as a chance probability. Table 6 shows that the frequency obtained occurred 16 times. Chi Square was used to test the null hypothesis. The analysis demonstrated that an obtained frequency of this magnitude would be expected to occur by chance less than once in one thousand times.

LIMITATIONS OF THE EXPERIMENT

The experiment included only two arrangements of the four colors. Ideally, it would have included all possible arrangements of the colors that were used. This would have necessitated a 24 phase experiment. Since it was desired primarily to discover whether there was some such influence in any arrangement, it was not considered necessary to include all 24 phases.

The four colors selected for the experiment were chosen because they are commonly encountered as basic colors. Children of this age were likely to be familiar with all four of them. It is possible that four other colors or that a different combination of hues would yield the same or different results.

The number of colors used was limited to four in order to keep the experimental design simple. An additional factor in limiting the number to four is the feeling among art education specialists that children of this age are assisted in their creative efforts by limiting the number of colors at their disposal (4).

The sample used in this study was a selected one and may not be representative of the larger population of three-year-olds. Although the data seem to be essentially in agreement with the findings of other investigators, the results with this group may not necessarily hold for other groups of the same or different ages. Rae M. Smith's findings were substantially as found here even though different colors were used and colors were rotated in position rather than interchanged.

Conclusions and Discussion

Although the data did not withstand statistical criteria of significance in support of the hypothesis that the order of use of color by nursery school children was influenced by the arrangement of the colors along the easel, the tendency of the evidence in the direction of the hypothesis was noteworthy. It would be hazardous to ignore the possibility of influence caused by the presentation and arrangement of color in experiments seeking to relate first choices to the concept of preference for color.

The most striking finding of this investigation was the evidence that three-year-old children used colors at an easel in sequential order of presentation to a significant extent. The majority of the children taking part in this study demonstrated such a painting behavior in two trials at the easel. The analysis of the number of times this event was observed throughout the experiment showed that the amount of this behavior was not likely due to chance. Staples and Conley commented on the occurrence of sequential use of color in their study of children's finger paintings but they did not furnish tests of significance (7).

Perhaps in this facet of behavior there is some evidence in support of theorizing regarding the preschool child's approach to painting. It might be said that the approach to painting among nursery school children of age three to four is one of directness of application of color rather than one of selective discrimination between and among colors. The mode of painting is to apply the color without conscious deliberation and to react to the color as it is spread out on the paper. This would explain, to some extent, why overlaying of color and painting out previously colored areas is so commonly observed among preschool children. What would appear, then, to be a seemingly mechanical approach is possibly better considered to be a rather efficient method by means of which children test the color to determine its affective value for them.

The significance of such findings for education would be simply to reinforce the now widely held viewpoint which sees painting at this level as mainly exploratory and recognizes that the activity is in itself rewarding to the child. For, among other things, he discovers his reactions to color through the process of using it.

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WILD CHILDREN AND THE PRINCIPLE OF REINFORCEMENT

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Wayne Dennis has recently returned to his discussion of alleged cases of children partially reared in isolation or in association with animals (2). His conclusions confirm his earlier analysis (3) and he insists that the utmost caution be used in accepting the evidence on feral children. As he points out, it is difficult to see how such evidence can ever be anything but inconclusive.

The more important aspect of the discussions on wild children concerns the applicability of such data as do exist to the general question of the socialization of the human offspring. There is a tendency to regard these data as substantiation for the hypothesis that early conditions of nurture are important in the future life of the child. For purposes of analysis Dennis first accepts the evidence and then proceeds to review six cases from Singh and Zingg (5) on which the fullest data are available. Quite rightly, he refuses to accept his own analysis of these cases: "that the socialization which ordinarily takes place during the early years is readily lost upon close contact with animals; that animal influences are relatively permanent." As I understand it, Dennis is not in disagreement with the hypothesis concerning the importance of early nurture but wishes to be most exact in outlining its conditions. In the present paper. I should like to carry the analysis of Dennis' cases a step further and to discuss a principle which seems to overcome the dangers of an over-simplified argument concerning the importance or lack of importance of the early years of rearing. I will also indicate the nature of the field investigations in India[1] which led to my utilization of this principle, tentatively called here "the principle of reinforcement."

It should be noted that the principle of reinforcement differs in important respects from reinforcement theory as employed in psycho-sociological studies of learning. Reinforcement as used in this paper means more than the reward which reinforces the response in a simple stimulus-response situation, a point which will be referred to in greater detail below.

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[1] Field work was made possible by the financial assistance of the Wenner-Gren Foundation for Anthropological Research and the Social Science Research Council.

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TABLE I

SUMMARY OF DENNIS' DATA ON SIX FERAL CHILDREN
REPORTED BY SINGH AND ZINGG

Case No.	*Estimated Age at Isolation*	*Estimated Age at Discovery*	*Period of Isolation*	*Recovery*
II . . .	3 years	9 years	6 years	Never learned to speak, very little improvement
V . . .	6 years	10 years	4 years	Learned to walk, no other data
VI . . .	4 years	10 years	6 years	Learned to walk, learned to obey signs but never learned to speak
VII . . .	less than 4	4 years	? months	Went to school, eventually became a policeman
XI . . .	2 years	5 years	3 years	Learned to walk, to eat vegetables, and to be friendly
XXVI . . .	less than 3	3 years	? months	Learned to walk, eat and drink like a human being, laughed often and loudly, did not learn to use or to understand language

Before the six cases can be analyzed it is necessary to accept them as evidence, even if only temporarily. Dennis' method in this connection is therefore followed and I have summarized his data in Table 1. Although I agree with him in his caution on the value of this evidence, I should add parenthetically that I am not greatly impressed by the analogy he draws in his earlier paper between the behavior of feral children and the behavior of children who are mentally defective. Unless we suppose that the cases on record were discovered within a day or two of their abandonment or loss—and although Dennis suggests this, there seems no evidence to support it—we are forced by this interpretation to attribute considerable survival value to subnormal mental conditions. This is a conclusion which I am little inclined to view favorably. In the six cases noted, it is to be remarked that five were said to be lost to human socialization at or just under three years of age. By that time, a child might conceivably manage to subsist alone without animal intervention. The trait which most suggests animal rearing to my mind is that of eating raw meat. Dennis quotes Zingg's quotation of Tredgold to the effect that some idiots will eat and drink anything (2, p. 430). He fails to point out that a preference for raw meat is not the same as an avidity for anything within reach. It is difficult to see how a child of three would obtain raw meat without assistance or how a child would hit upon killing for food unless some imitative training were involved. This would be especially relevant in India where many children would have no experience of even cooked meat.

To be parenthetic again, I am more in accord with Dennis' early observation that feral children have generally been reported from just those areas in which the folklore contains references to children reared by animals. It is certainly true, as he points out, that events tend to be interpreted in terms of belief and one cannot escape the feeling that many of the reports of feral children have been thus influenced. However, this suggestion needs careful checking for particular cases against their own local traditions and customs. So far as I know no adequate or convincing study has been made of wild children along these lines. The interplay between reality and belief is far from simple. Not only do people interpret as they believe but they base their behavior upon their interpretations. At least one study suggests that events themselves are affected in the direction of folk belief (4, for discussion see also 6, 295-296). In view of the complexities, it seems wise to leave out such interpretations until more is known of the mechanisms involved. At any rate, all such discussion of feral children must necessarily exist *in vacuo* because of the nature of the evidence. It is more important to examine the way in which the evidence has been used.

In his analysis of the six cases, Dennis makes telling use of the fact that exponents of the traditional view, i.e., that cases of feral children provide data confirming that early childhood influences are relatively permanent in their consequences, overlook the purely human influences of the period of growth before abandonment. Since his analysis is directed particularly to this point, it takes little account of the duration of the period during which human influences are allegedly absent. In the table summarizing the data, therefore, I have included a notation to this effect. The cases show a total of twenty-two years of initial human socialization over the six cases, varying from two to six years. This was then followed by a total of something over nineteen years of isolation or non-humanized adaptation, varying from a few months to six years. In all cases except one, the effect of isolation was not subsequently obliterated. The traditional view is to regard this period of early, although not initial, experience as definitive in later behavior. Dennis feels that the early period of socialization makes such a conclusion untenable. He asks, in effect: if early influences are significant in determining behavior, what has happened in these cases to the initial influences toward socialization?

But the data may also be subject to another interpretation. The longer the period of isolation the more permanent its effects seem to be. The three cases in which isolation lasted from four to six years were those in which there was apparently least recovery. One case with an isolation of three years recovered enough "to be friendly." The two cases in which isolation may be estimated in terms of months rather than years varied, one showing marked but not complete recovery, the other recovering sufficiently to assume a normal place in human society. The question, therefore, is not whether the early years of socialization have been influential, but concerns the period of isolation required to neutralize the early socialization.

Since all of this discussion is carried out under the temporary assumption that the data on feral children are to be accepted, it is legitimate to ask a further question. Would not the effect of abandonment, or alleged theft by animals, be greater than a mere discontinuity in training? Suppose that a child conditioned to normal human care be suddenly deprived completely of that care under circumstances demanding a maximum of readjustment of every learned response and at the same time instilling, at least in the beginning, terror or other strong emotional stress. Such a picture can hardly be understood in terms of socialization and its withdrawal. There are data to suggest that simple bilingualism makes for a period of psychic maladjustment. The sudden reorientation which we must assume to have occurred in the survival of the feral child, however that survival may have been implemented, might be supposed to have a psychic effect of much greater magnitude. The mechanisms by which this might be accomplished, however, remain unclear.

In carrying out anthropological field work among Punjabis from East Punjab, India, and West Punjab, Pakistan, in 1948-1949 I was presented with a problem of nurture not unlike that under discussion. The more complete of my data on child training came from followers of a religion called Sikhism which is a Hindu reform sect. The picture of Sikh infancy and early childhood obtained was one in which the child was well loved, anal training was gradual and unaccompanied by trauma, and weaning was delayed; the demands on the child were made quite clear and placed within his capacity, success was rewarded and failure punished but punishment was never associated with rejection or withdrawal of love; and wants were often interpreted and fulfilled before they were intense enough to be expressed, certainly before any crying occurred. The last element, in particular, helped to set up a strong dependency relation not only with the mother, but because of the nature of the family situation, with other members of the family as well. The data supporting these generalizations are, naturally, voluminous and need not be repeated here. It is enough to point out that the same picture of early child training was obtained, although the investigation was admittedly not as complete, for Punjabis who were followers of Islam (what is often called Mohammedanism by Western scholars).

Certainly the broad outlines of child training are similar for the two groups, and they are sufficiently unlike ordinary Western training to be readily observable. Adults of both groups revealed the characteristics of the generally "secure" personality, characteristics which might be expected to result from such early rearing, including generosity, self-assurance, ability to succeed in unfamiliar tasks, lack of excessive guilt, and capacity for coping with the demands of a complex social, and difficult economic, environment. These traits are by no means the only ones which can be isolated in Punjabi character structure, and I have as a matter of fact outlined their cause-and-effect nature with a greater assurance as to the mechanisms involved than I actually feel to be warranted. Partly this is because they suffice for our present purposes and partly because I wish immediately to introduce other factors.

My field work in the Punjab was done after eight years of previous library research and work with Punjabis in the United States and Canada. During these years the whole national situation had radically shifted. The year before I went to India had seen the partition of the subcontinent and the resultant shifts of population between the newly constituted sovereign states. Everyone knows of the accompanying disorders during which much damage was done to both life and property. All that we need emphasize here is that our two groups, Sikhs and Muslims, were actively engaged in hostile actions against each other. This demonstrates, what is clear enough anyway but often apparently overlooked, that learning consequent upon the early years of life, even learning in the academic or ideological sense, materially affects adult behavior. More importantly, it poses the problem of possible differential treatment in childhood which sets the stage for the eventual differentiation of Sikhs and Muslims.

Mention has already been made of the fact that the first years established a pattern of strong dependency for these individuals. In both groups, however, the explicit and quite articulate aim is to raise male children who are "men," i.e., self-dependent, brave in enduring hardships, staunch in loyalties no matter what form opposition may take, and capable of self-sacrifice for ideals. Infant training is relatively the same for girls and boys. But by the time male children are four or five, both groups begin a gradual process of weaning them away from dependency. Sikh boys who cling to their mothers' skirts in the presence of strangers are urged to come forward and not be "shy." They are never, of course, forced away from their mothers nor is it a punishable offence if they refuse, but positive rewards in praise and attention accrue if they do. Children of both sexes care for smaller siblings and there is a marked tendency for children to move through the villages and their environment in groups or gangs relatively isolated from adult control. Independence from female supervision is further accentuated for boys by the fact that they are intentionally brought into the male world by the age of six or seven. In both groups, women's activities are more or less limited to the house compound and they seldom meet guests or strangers. Little boys, however, accompany their fathers and uncles on errands and visits, and form a natural part of the male family group which carries on all extrafamilial affairs. By ten or twelve, boys often join the adult men in sleeping in the combination guest- and men's-quarters within the compound.

The early dependency of male children is, therefore, gradually and quite effectively shifted in the direction of self-reliance and male responsibility. The first years of nurture leave a residue of great familial warmth but because other factors are introduced the results of training are radically changed, if not, in some respects, negated. On the other hand, female dependency is reinforced through the comparable years of childhood and what change occurs leads only toward the ultimate transfer of dependency from blood kin to husband and husband's family. It is only after marriage and the birth of her own children that the woman achieves a self-reliance which can be compared with that of her spouse. Even then, the outer symbols of female dependency are valued and generally retained until well after middle age. In the light of these data, adult behavior may be said to depend not only on the nature of training but also, and in large part, on the extent to which that training is reinforced.

Distinctions may also be seen in the development of males of the two groups. Sikhism and Islam have a number of points of similarity. But there are also important differences between them, one of which will serve our purpose here. Whereas Muslims are taught to respect and to follow the Law as laid down in the Koran, Sikhism explicitly establishes a less rigid responsibility. The Khalsa, which is the heart of religious organization and responsibility, may be set up at any time and in any place by any five adult males. Where there are five Sikhs, there is the Khalsa; and the allegiance they owe to a central religious body is completely voluntary. It can be seen that the self-reliance expected of Sikh men is almost complete. The expectation rests in its turn on the firm knowledge that security within the family is absolute. Family property is held jointly in the male line. Although there has been fairly recent legislation to the effect that this applies only to adult males and other changes in the definition of family properties have also been made, the feeling is still strong that any male, of whatever age, is directly concerned. Sale of land, therefore, is discussed in the presence of male children and their consent is regarded as desirable if no longer legally necessary. A man may not, in the last analysis, ever be deprived of his rights within the family. Absences up to forty years in duration may be followed by complete reabsorption into the family economy. I have several cases of men who had to leave their villages because of ill-conduct being similarly accepted later. One, for instance, ran away with another man's wife, an action which violates every Sikh code. Yet after the couple lived together for a number of years in a distant city, the man returned to his village and his family after the death of the woman, and brought with him their grown son. In childhood this absolute family solidarity in the face of any behavior is expressed by full adult support, at least in public. A little boy who is in a scrap with another child may be completely in the wrong—his father will reprimand him privately but defend him against the family of the other boy. This probably happens relatively seldom but I again have cases of actual battles between the men of large sections of villages over just such incidents, battles in which the naughty child was only too proud to participate. Sanctions of numerous sorts are of course used against ill-conduct but in the last analysis, *no* behavior on the part of the male Sikh can deprive him of family support whether moral or financial. The same may be said for the woman with grown sons. A place in a family in this society also means a place in the village and the social system in general so that security is further reinforced. Although many of these social and economic factors hold equally for the Punjabi follower of Islam, his religion presents him with more explicit rules of conduct and he does not have the same thorough-going social and religious reinforcement for the validity of his own behavior, however self-determined.

From the Punjabi data so briefly summarized above it can be seen that the general personality depends upon early nurture. On the other hand, some of the effects of the initial patterns of nurture are intentionally reversed in later training. This reversal is not so complete for Muslims as for Sikhs but in either case its successs is apparently due to the consistency with which the elements of the social environment contribute to the same result. It may be concluded, therefore, that the early years of nurture are important in determining future behavior. But it may also be concluded that conditions of life subsequent to the first years are almost equally significant to adult behavior. Neither of these conclusions is revolutionary in any sense. They are probably both accepted by all those interested in child development who are not espousing some one theory to the exclusion of others. What is more important is the idea that behavior is affected by the extent to which conditions reinforce each other.

This principle of reinforcement apparently operates in two ways: 1) through influences which succeed each other in time during the development of the child but proceed from the same general source, and 2) through influences which may occur more or less simultaneously but which, in any case, derive from different aspects of the total socializing environment.

The significance of reinforcement is now mainly recognized in the familiar conflict situation in which, for instance, permissive training is disrupted and alternates with excessive discipline, or the effects of maternal and paternal care operate in different directions. Ideally in society, maternal and paternal care supplement each other so that the effects of the two are absorbed together. Conflict seems to arise when they function at cross-purposes. The principle of reinforcement used here is less a re-statement of these mechanisms than a view which includes within the socializing environment the total area of influence to which the child is subjected and at the same time broadens the definition of nurture so that it is not limited to idiosyncratic elements.

The socialization of the child is accomplished not only through the media of particular individuals with whom he comes in contact but also through the recognition of larger configurations. As he grows older these impinge upon him from an increasing number of directions and with increasing strength. In the first years of life many cultural factors reach the child only as sifted through the behaviors of individuals to him. This is gradually replaced by experience of factors from multiple sources. The period of "sheltering" varies not only from one individual or one family to the next but also from one culture to the other. The Sikh child at the age of three, for instance, is normally allowed opportunities for personal exploration of his physical and social environment which are denied to American children except under the most unusual conditions of urban deprivation or rural isolation. By six or seven the Sikh male is regularly permitted an amount of freedom of movement often denied to Americans right through their adolescence: he may go unattended beyond the confines of his home and village, and he may be away from home at meal times or overnight without previous warning and without occasioning undue comment. To equate the self-reliance of the Sikh and American in terms of chronological years is thus impossible. The aspect of these experiences to which I am here calling attention, however, is the degree to which they tend to reinforce each other. Do his early experiences with individuals agree with what he later hears as precepts or preferred behaviors? Do these, in turn, correspond to his personal observations of events and conditions? Do religious practices involve adaptations similar to those required by legal sanctions? It may even be postulated that behavior depends as much on the relation which such various facets of training bear to each other as on the nature of each facet taken separately.

The extent to which the principle of reinforcement differs from reinforcement theory as usually discussed will now be clear. It is unfortunate that a less confusing term has not presented itself. But the commonplace meaning of "reinforcement" is so much more readily applicable to the principle suggested here than to the reinforcement in learning theory that ultimate confusion may be successfully avoided. Benedict's reference to "continuity and discontinuity" (1) in cultural conditioning provides another possible term. Since, however, she is referring particularly to discontinuity of role and the term implies a uniquely temporal orientation, as between childhood and adulthood, it has not seemed wise to adapt it for the present purpose. When Benedict speaks of the child being "nourished by continuous experience" (p. 163), we are certainly dealing with the same mechanism. Her attention, however, is focussed upon continuities between total syndromes of expected behavior and their effects, whereas this paper concentrates on relationships which exist between aspects of training in setting up those syndromes and on the mental health of the individual so affected. As child training mechanisms become clearer, there seems little doubt that the connections between these will be clarified and a single term can be substituted.

This brings us back to the consideration of Dennis' cases of wild children. Whether or not they have been raised by animals seems, in view of the evidence, to come down to a matter of personal faith. One believes or does not believe in feral children in this sense. Nevertheless, if the data are accepted on their face value for purposes of argument, I would agree with Dennis that they say little as to the *nature* of the child training involved. They do, however, say considerable as to the *relationship* between one and the other sets of training. These cases surely represent the ultimate in non-sequitur, or contradictory, nurture. They furnish an example of complete absence of reinforcement. Presented with such severe and sudden contrast, the human organism seems capable of learning enough new behaviors to continue its physical existence. But when the second set of conditions continues for a considerable period, without any reinforcement of the earlier learned responses, the organism seems to suffer permanent effects. Perhaps the shift has been too drastic and too long sustained for any far-reaching rehabilitation to be possible.

However this may be—and I certainly hesitate to conclude anything from these cases—the relevance of the feral child to psychological theory seems to be less in illustrating the absolute importance of early training than in pointing up the need for, and positive value of, reinforcement in child development.

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POSSIBLE CAUSES OF OVERDEPENDENCY IN YOUNG CHILDREN[1]

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The American socialization process emphasizes the learning of independence in the childhood years. Perhaps more than in other societies, standing on one's own feet, being able to fend for oneself is an important characteristic of the socialized person in our society. Beginning in early childhood we systematically train our children to attend to their physical needs by themselves (feeding, dressing, toileting), to learn to get along without the mother's continual presence and to learn to take a certain measure of hardship without turning to the socializing agent for help or comfort.

But the American socialization process also emphasizes dependence. American parents want their children to turn to them for guidance and to accept their instructions as they attempt to induct the young into the mores of society. It is important for our children to learn a dependency drive—to learn to solve some problems by turning to the adult because the adult knows the approved ways of behaving. Successful socialization, then, involves the acquisition of a culturally approved balance between dependency and independence.

Not all children learn the proper balance between these two drives. Some children become overly-dependent upon mother or mother substitute. These are the children who continually seek out adults for their presence, their help, or their approval. They find it hard to grow up and cling tenaciously to their mothers for support.

This paper is concerned with causes of overdependency. It reports the results of a study in which 20 young children (six-year-olds) who were rated as being overdependent were compared with 20 young children who served as controls. Two hypotheses were advanced to explain overdependency and each of these was tested in the study:

1. Overdependency results from a non-permissive approach to infant disciplines. During the past decade an articulate group of neo-Freudians has advocated a permissive approach to feeding, weaning, toilet training

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and the like, and has attempted to establish a relationship between a non-permissive approach and later personality difficulties. The question for us in this study was: Will a non-permissive approach to infant disciplines result in overdependent children?

These basic assumptions underlie the second hypothesis:

a) Dependency is a *learned* drive.
b) Independence is a *learned* drive.
c) Overdependency represents an overly strong dependency drive and a correspondingly weak drive toward independence.
d) There are critical periods during infancy for the learning of dependency.
e) Anxiety can serve to strengthen the dependency drive.

Our second hypothesis which rests upon these assumptions is:

2. Overdependency results from either of the following conditions:
a) Where a child is consistently rewarded for turning to the mother for help, and punished or non-rewarded for independent actions; (i.e., he has an overprotecting mother).
b) Where a child meets so many tension-producing situations during the critical period in learning dependency that his dependency drive is reinforced to the point where it is overly strong.

These two hypotheses need further elaboration which follows:

Infant Disciplines and Overdependency

Infant disciplines have been suggested by some authorities as a possible factor in causing overdependency. They point out that every child regardless of the society in which he is reared is exposed to certain training situations such as weaning and toilet training in the process of socialization. Furthermore, they argue, these training situations are the seedbeds of emotional conflicts. Following in Freudian footsteps, they point out that severe conflict during these early training situations may cause a total arresting of development or the retaining of more characteristics of earlier stages of development than is normal. Thus extreme oral deprivation during the oral stage of development might result in a person becoming "fixated" at that level of development. When this happens, the person "will, in his general behavior, present a disinclination to take care of himself, and require others to look after him. . . . Persons of this type request and demand a great deal, will not relinquish their object and affix themselves by 'suction'" (3, p. 489). Overdependency according to Fenichel might result from a person being fixated at the oral stage of development because of extreme oral deprivation, or for some other reason. He describes a case:

> A case of this kind had had several oral-fixating experiences. He was breast fed for a year and a half, while living with a doting grandmother

> who spoiled him in many ways; then he was suddenly removed and lived with his excessively severe father. The result was a character governed by one predominant motive: to be reimbursed by his father for the oral gratification of which he had been deprived. Failing in this, he resorted to force to regain it. The patient had no occupation. He lived on his father's money and persistently considered himself discriminated against by his father. The conflict between the tendency to respond to disappointment by applying violent measures (to take by force what does not come automatically) and the simultaneous tendency toward ingratiating submissiveness is characteristic for oral fixations (3, p. 489).

Some writers also in the Freudian tradition emphasize the frustration which may be produced in the early training situations as leading to overdependency. They point out that such practices as feeding babies by the clock, weaning them too early or too abruptly or toilet training too early and too severely may cause insecure and anxious children, some of whom may be overdependent.

Underlying the assumption that these training situations are crucial is the belief that it is frustrating to the infant if he is trained early and not so frustrating if the training occurs later. Infants require a certain amount of sucking, the argument goes; to be deprived of sufficient sucking experience by too early weaning is thwarting to the child. Similarly too early toilet training is thwarting since the child is being required to do something for which he is not physiologically prepared. The resulting frustration might make children stubborn and aggressive at a later age as a result of their battles over weaning and toilet training. On the other hand, if the child resolved the conflict by giving in to the will of others he might develop an overdependent personality.

Overdependency as Learned

To understand overdependency as learned behavior, we need to trace the course of this learning, and to consider first what the infant brings with him into the world in the way of needs or drives.

According to the learning theorist, some drives can be found within the child from birth. Hunger is an example of a very powerful need or drive with which the infant is born. We say it is a drive because it motivates the infant to activity. It represents a state of disequilibrium or tension within the organism. When this state of disequilibrium arises, the infant is motivated to act; he may cry, thrash about and suck his fingers as a temporary means of relieving tension, and he will reduce his activity, be relaxed and sleep after he has been fed and physiological equilibrium restored to the body. Similarly there are activity drives which originate in the muscles attached to the skeleton. Disequilibrium or tension arises when the individual maintains a particular posture for a period of time; this tension is reduced by changing the position of the body or of some one part of the body, as for example, by shifting weight from one foot to another. In addition there are drives which may be classed as sensory and emotional in nature which again serve to motivate the individual to some kind of activity.

But man is not only motivated to act because of certain primary drives; in infancy he begins to acquire other motives which also impel him to act. This he does through a process of learning; the new motives are called secondary drives or learned drives. The young baby touches a hot stove; his body is thrown into a state of tension which is reduced as the baby withdraws his hand and the pain subsides. The next time the baby approaches the stove, even without touching it, the same state of tension may arise within his system and the baby may back away before he actually experiences pain. Now it is fear rather than pain which causes him to act. We may say of his behavior that he has learned the drive we call fear and that this drive may motivate him to withdraw from stoves in the future.

Even during infancy emotional drives other than fear are learned. One of the most basic of these from the standpoint of later personality development is that of dependency. Now we shall trace the beginnings of this drive as well as some of the conditions which modify its strength.

The Process of Learning Dependency

As we have already pointed out, the human infant is born with a hunger drive. The infant must have food to survive; when his stomach is empty the need for food gives rise to a stimulation or drive state which typically takes the form of restless or crying behavior. We may say the infant has a hunger drive which motivates his behavior. This restless or crying behavior will cease when food is swallowed and the hunger drive reduced.

The infant, however, is capable of learning and by a process of conditioning he comes to respond to certain cues which stop crying and the thrashing about before the food is swallowed. Probably the first cue that he learns is that of the feel of the nipple in his mouth. Because this sensation occurs with reduction of the hunger drive it quickly becomes the cue to which he responds by ceasing crying.

The next step in the learning of dependency is that which takes place when the infant stops crying and begins making sucking noises upon being picked up. A new cue has been added to his repertoire. Now it is no longer necessary for food to begin its way to the stomach for tension to be reduced or for the infant to feel the nipple in his mouth, for the cue of being picked up has become the signal for the reduction of the hunger drive. Gesell (4) notes that by four weeks of age cessation of crying on being picked up can occur.

Step 3 in the learning process occurs at 16 weeks. According to Gesell (4), this is the age at which the infant quiets when his mother enters the room. Tension reduction now occurs—not on being picked up, not on oral sensation, not on food in the stomach, but with the presence of the mother. As her presence becomes more and more associated with the good things of life, it comes to have reward value for the infant.

Throughout the first year of life the infant shows increasing awareness of the value he attaches to his mother's presence. At twenty-eight weeks he can distinguish his mother from other people and demands more of her than of others. These demands continue as the infant approaches his first birthday; he may cry when she leaves the room or when she turns him over to a stranger to be held. By his demands upon her, he indicates his own recognition of his need for her. When his perception of his need for mother's presence has reached this stage we may safely say he has a dependency drive. Now when faced with a problem which gives rise to tension in the organism, whether it is the toy that lies just out of reach of the playpen, a visitor's strange hat, or hunger, cold and thirst, the infant turns to his mother to solve the problem and reduce the tension. He has a need or drive for her presence and for her help.

The next step in the learning of dependency occurs when the child learns to seek approval and to avoid the disapproval of others. Again this occurs through a process of conditioning. If reduction in tension is accompanied by verbal approval, eventually the child will seek verbal approval as a means of reducing tension. Typically when the mother is trying to soothe the infant she will talk in comforting tones to him. Reduction of his primary needs by feeding, rocking or warming is accompanied by soothing talk of an "approving" nature and eventually such talking comes to seem "good" to the child (7).

But not only is he conditioned to like speech; he is also eventually conditioned to like approving speech and to distinguish between verbal approval and disapproval. When a mother decides not to comfort the child, she will tell him so, frequently in sharp, "disapproving" tones. These sharp "disapproving" tones come to have a negative value for the child since they signify that his primary wants will not be cared for; thus they come to mean a painful rather than pleasurable state of affairs. Just as he learns to want his mother's approval so he learns to avoid her disapproval.

Some children, however, do not have a chance to learn dependency. The kind of conditioning process we have described does not occur, because there is no continuing relationship with one person. These children are very difficult to socialize because they have never learned to want the social approval of others. They are unmoved by punishment. They are driven by inner impulses which demand immediate satisfaction. In turn they cling and then react in very independent fashion. Threats have no effect upon them. Such children have been described by Bowlby (1), by Erikson (2), by Spitz (10) and others who point out that such factors as maternal deprivation are at work here.

Some children, on the other hand, become overdependent, as we have already indicated. According to Hypothesis 2, their overdependency may be learned in one of two ways. Where the child from birth is consistently rewarded for being dependent and non-rewarded or punished for being independent, he becomes a dependent, submissive individual. This kind of treatment is typically afforded the child by overprotecting mothers. Levy (6) has described extreme cases where this development has taken place. His overprotected children had excessive contact with the mother; they were still being indulged and waited upon as if they were babies; their attempts at independent behavior were discouraged. Such children may be said to be overdependent because of a deficiency in independence training and because dependent behavior is constantly rewarded.

From observation it becomes apparent that not all children who are overdependent conform to Levy's description, however. Some overdependent children have mothers who are not overprotecting, as were the mothers Levy described. Levy's parents might be said to be the instigators of the overdependency. In some parent-child relationships, however, the mother *unwillingly* accedes to the child's excessive dependency demands and because of her unwillingness is inconsistent in her treatment of the child. The child is the instigator of extreme dependency demands. Also, the child's overdependency does not extend to all areas but is limited to selected ones. Thus the overdependent child of the non-overprotecting mother may insist upon his mother's accompanying him back and forth to school but accomplish such tasks as tying laces at six years of age without demanding help.

Critical Periods in Learning Dependency

It is necessary to elaborate on reinforcement theory to explain how this type of overdependency begins. In a study of ordinal position in the family as a psychological variable, Sears (9) found among other things that the oldest child in the family was more likely to have experienced anxiety in the nursing and weaning situations, and at the same time more nurturance at bedtime and more cautioning about sickness and danger than second and later children. Older children were also rated as the more dependent. Sears suggests that the anxiety produced by frustrations in nursing and weaning serves as the facilitating instigator to whatever behavior has been predominant in those infant situations in which the anxiety was aroused. Thus since dependency behavior is likely to be predominant at the time of nursing and weaning, anxiety produced in nursing and weaning situations will strengthen the dependency needs.

Sears' hypothesis implies two different factors in child training situations which might influence overdependency: (*a*) the possibility of critical periods in the socialization process and (*b*) the function of anxiety during one of these critical periods. These two factors we will examine separately.

The possibility of the existence of critical periods in the socialization process has been recognized by researchers working with animal subjects. Scott and his associates (8) report:

> A number of years ago one of us (J.P.S.) tried the experiment of isolating lambs from their mothers at birth and raising them in association with human beings. At the end of the first 10 days in life they were replaced with the flock but seemed to have undergone a fundamental change in behavior, in that they did not follow the flock and never became strongly associated with it even after several years. This pointed to the major importance of early experience. At a later date the same sort of experiment was repeated with a puppy. In this case it was kept away from other dogs for a period of about nine weeks before it was replaced with its litter, the expectation being that the longer period would have an even more drastic effect. However, after an initial period of fright it soon adjusted itself, and in a very short time its behavior was indistinguishable from that of its litter-mates. The superficial conclusion here would be that early experience has little effect on later behavior. Since that time the careful study at this laboratory of the development of behavior in the dog has led to the hypothesis of critical periods, which may help to explain such different and apparently contradictory results (8, p. 162).

In their study of dogs, these writers were able to identify five distinct periods marked by the appearance of different patterns of behavior relationships:

Period I, the neonatal period. Principal activities—nursing, defecation, urination, crawling, whining. Little or no capacity of learning or memory, hence, Period I is not critical from the point of view of learning capacity. May be critical in that life depends upon successful adjustment to the mother. No evidence of after effects of such experiences as removal from mother, tail docking or operations.

Period II, the transition period. Ten or fourteen days to twenty-one days. Marked by important changes in psychological capacities. Has vastly increased its capacity for associative learning and by twenty-one days can be conditioned very easily.

Period III, the period of socialization. A critical period with regard to the development of social relationships; adjustment to human beings important. Dogs who do not have human contacts during this period become "pathologically" shy. Evidence indicates that disturbances occur more easily at this time and do have definite effects on later adjustments.

Period IV, the juvenile period. Marked by growth, increasing physical skill and increasing independence.

Period V, the adult period. Marked by growth, increasing physical skill and increasing independence.

On the basis of experimental work by these and other writers, it appears that there are special times in the development of dogs which are more important than others. Period III appears to be most critical for social relationships, probably because of the vast change in the capacity for associative learning which occurs at this time.

As we turn to the human sphere we find Bowlby (1) pointing out that there may be critical periods in socialization for the psychological development of the child. He reviews the research on maternal deprivation upon personality development in relation to the time of its occurrence. A child may be deprived of maternal care and affection by (*a*) having to live with a mother or mother substitute who rejects him or (*b*) by losing his mother and not having a familiar mother-substitute or (*c*) being removed from his mother to strangers. He quotes numerous writers who have described the effects of maternal deprivation during the child's early years. There is considerable agreement that the period during which maternal deprivation can seriously handicap a child is limited. According to Bowlby, separation from the mother after six months and up to three years is particularly damaging. Such a separation results in a personality which is asocial, affectionless, uncontrolled, distractible and aggressive. It would seem that a close and continuing relationship with one person during this critical period is necessary if the child is to learn to establish satisfactory relationships with other human beings. This learning is best (and, perhaps, only) accomplished during the critical period.

Similarly there may be a critical period in the socialization process during which time it will be easier for the child to develop overdependency than at other times. To understand how this may happen we need to consider the second factor in the Sears hypothesis: the factor of anxiety. During the latter half of the first year, as already indicated, the time comes when the child has matured sufficiently in his perceptual powers to not only recognize his mother but to recognize that he is dependent upon her. When he arrives at this stage, he will turn to her for comfort and reassurance whenever an unusual state of tension arises within the organism because he has already learned to associate "mother" with tension-reduction. Should environmental conditions be such as to produce many tensions, the dependency drive will be strengthened. In other words, *undue stress toward the end of the first year of life or during the second year may cause the child to turn more and more to his mother and establish habits of overdependency.*

Few children in our society know a stable and continuous environment in every respect. The very fact of raising a child brings changes in the parents which are continuous. Attitudes on the part of the parents toward the child may change; a parent may reject a two-year-old but enthusiastically accept the same child the next year. Some of these changes may come about subtly and gradually so that the child has a period of time in which to accustom himself. Others come suddenly; a beloved grandmother dies. An unknown father appears and a mother who has been mother only suddenly becomes a wife also. A mother goes off to work. The family moves and familiar toys, blankets and bed vanish; new rules and schedule are instituted.

The problem of adjusting to a new situation creates tension within the child. Between the time he first perceives his need for his mother and the time he is more independent in solving problems, he is most likely to turn to his mother when tension arises. A strange person picks him up; he turns to his mother for comfort. He is put to bed in a strange crib; he relaxes only when his mother is sitting beside him. A stranger takes care of him during the day; he cannot tolerate separation from the mother when she returns in the evening. He is mature enough perceptually to recognize changes in his environment; some of these changes are tension-producing; he has learned to depend upon his mother for reduction of tension and so solves his problems in this fashion.

For most children the tension-producing situations which are resolved by dependency are not exorbitant in number. Ideally they are of sufficient number so that the proper amount of dependency will be established, creating a favorable climate for the child's dependence upon the adult in the moral realm. For some children, however, sudden changes of a serious nature and extensive in number may occur during the critical period after he recognizes his need for his mother (nine months average, according to Gesell) and before he has sufficient language ability to be prepared for the changes (after three years). When this happens, dependency may be practiced to the point where overdependency results.

To summarize, the hypothesis stated earlier may be repeated.

1. Overdependency may result from either of the following conditions:
   - *a*) Where a child is consistently rewarded for turning to the mother for help, and punished or non-rewarded for independent actions, (i.e., he has an overprotecting mother); or
   - *b*) Where a child meets so many tension-producing situations during the critical period in learning dependency that his dependency drive is reinforced to the point where it is overly strong.

We now turn to a description of the methods and procedures for testing both the hypothesis that overdependency is related to infant disciplines and the hypothesis that it is a learning phenomenon.

METHODS AND PROCEDURES

Step one in conducting this research was the selection of overdependent children for study. The decision was made to study these children at the first-grade level (age six years plus) because the problem of identification is easier at this point; this is the year when most children leave home for the first time and when evidences of overdependency are most striking. For purposes of selection, an overdependent child was defined as one who

Playing with Others:

Does your child play with other children outside of school?

On the average, how many times a week does your child play with others (not in the family) outside of school?

On the basis of parent responses to questions in these four areas, the number of children rated as overdependent was reduced to 20 and these formed our experimental group. There were 11 boys and 9 girls in the group. For our control group we picked a random sample of children drawn from the first grade population. Various occupations were represented in both groups, with skilled labor and clerical jobs predominating in both.

To test the hypothesis that overdependency results from a non-permissive approach to infant disciplines, we relied upon information obtained in parent interviews. We asked parents to tell us the approximate age at onset of weaning, difficulty of weaning and approximate age at onset of bladder training.

Although infant disciplines may also include scheduling of feeding, thumbsucking, masturbation and cuddling, these were not included in our parent interviews for various reasons. Scheduling of feeding occurs before the onset of overdependency; thumbsucking and masturbation are typically regarded by the infant discipline group as being a result of insecurity not a cause, and cuddling is too difficult to pin down.

For the first part of our second hypothesis relating to overprotection as a cause of overdependency, we attempted to establish criteria of overprotection. In Levy's (6) study of maternal overprotection, he cited three such criteria: (*a*) infantilization (keeping the child as an infant), (*b*) excessive contact (mother won't let the child out of her sight), and (*c*) prevention of independent behavior (refuses to let the child grow up). These three criteria are rather difficult to use in attempting to identify overprotected children for study. As Levy himself points out, they are not mutually exclusive criteria. If one is going to keep one's child as an infant, excessive contact is obviously necessary.

In place of Levy's three criteria, we substituted two, stemming from our theory of how overdependency is learned. We defined overdependent children who are overprotected as children (*a*) whose dependent behavior is consistently encouraged and (*b*) whose independent behavior is punished or non-rewarded. These are roughly analogous to Levy's criteria of infantilization and prevention of independent behavior.

1. *Encouragement of dependent behavior (infantilization).* We could not use samples of immature behavior at six years of age to find our overprotected children, for both overdependent subgroups might be expected to behave immaturely in certain respects. Instead, we looked to certain physical habits of younger children—drinking from a cup or glass, using

a toilet, and dressing oneself—as habits which normally mothers try to establish in their children during early childhood. We reasoned that mothers who did not try to teach their children habits of independence in two out of three areas within reasonable time limits might be mothers who were encouraging dependent behavior by such means. We defined "reasonable limits" as 14 months for the onset of weaning, 18 months for the onset of bladder training and 4 years of age for expecting a child to partially dress himself; these figures were arrived at arbitrarily after studying some standard guides for child rearing to see what was being advocated at the time.

2. *Prevention of independent behavior.* Here we used evidence with regard to the mother's refusal to let the child play with others, extreme caution about physical needs and the mother's own estimate of her reluctance to let the child grow up.

For the second part of our hypothesis, concerning tension-producing situations during the critical period in learning dependency, we began with a definition of terms. The critical period we had already defined as occurring between 9 months of age and 3 years of age, as explained in our presentation of the theorizing behind this hypothesis. By tension-producing situations, we refer not to the tension which may occur in the organism hundreds of times in the course of daily living, but rather to the tension that may occur in large amounts and over a long period of time due to unusual adjustments which the organism may have to make due to discontinuities in socialization. The loss of sight or some other major change in one's physical orientation to the world may be one such tension-producing event. While such physical disability cases are fortunately rare, four enforced psychological adjustments due to discontinuity are major enough in young children's lives to produce undue tension: (*a*) the permanent or temporary loss of an important socializing agent, (*b*) adjustment to a new socializing agent, (*c*) major changes in the physical environment of the child and (*d*) major illness. The severity of the discontinuity as well as number of discontinuities were taken into consideration in judging whether an event might be conducive of undue tension or not. Since these judgments had to be subjective and had to be made in the light of each child's background, three different people evaluated events in a child's life to decide whether serious discontinuity was present or not.

RESULTS

Overdependency and Infant Disciplines

As a test of the infant disciplines hypothesis we collected information from mothers about onset of weaning and difficulty in weaning and onset of toilet training for both the overdependent children and the control group.

When we compared our sample of 20 overdependent children with the 20 cases in our control group, we found that instead of being forced to adjust to early weaning, they were actually weaned later than the controls. For our overdependent children, the time of weaning ranged from three months to three years with a mean of 14.4 months. In the control group onset of weaning ranged from five months to eighteen months with a mean age of 11.8 months. Table 1 gives the data on weaning for both groups.

TABLE 1

AGE OF CHILD AT ONSET OF WEANING AND MOTHER'S RATING OF DIFFICULTY: 20 OVERDEPENDENT CHILDREN AND 20 CONTROLS

Overdependent Child	*Age at Weaning*	*Mother's Rating*	*Control Child*	*Age at Weaning*	*Mother's Rating*
John	12	Easy	Dan	7	Easy
Jim	9	Hard	George	6	Easy
Louise	24	Hard	Barbara	10	Easy
Susie	8	Hard	Roger	18	Easy
Will	18	Hard	Daisie	12	Easy
Shirley	24	Hard	Gerald	9	Easy
Robert	14	Easy	Vickie	9	Easy
Betty	9	Easy	Charles	10	Easy
Jane	9	Easy	Judith	12	Easy
Eliza	14	Easy	David	12	Hard
Lulu	18	Hard	Ed	5	Easy
James	15	Easy	Mike	18	Hard
Lee	3	Easy	Geraldine	10	Hard
Sarah	11	Hard	Priscilla	12	Easy
David	8	Easy	Bruce	16	Easy
Bob	18	Hard	Vincent	8	Easy
Katherine	12	Easy	Maria	16	Hard
Ronnie	15	Easy	Anna	18	Hard
Barnie	11	Easy	Veronica	10	Easy
George	36	Easy	Jessie	18	Hard

We next analyzed our data to see whether there was any difference between our sample and our control group in strength of frustration as indicated by the mother's evaluation of the difficulties encountered in weaning. Mothers were asked to rate the weaning as difficult, easy or in-between. A mother's evaluation of weaning as hard was interpreted as indicating greater frustration on the part of the child than if the mother described the situation as easy.

Again our analysis indicated little difference between our two groups of children with respect to weaning difficulties. Eight out of twenty mothers of overdependent children described the weaning situation as hard, while the remaining twelve considered that their child had easily made the shift. In our control group there were six mothers whose children had had difficulty and fourteen whose children had had an easy time in weaning. It would appear that strength of frustration during the weaning period is not an important factor in causing overdependency.

We might note here in passing that our data provided further evidence that early weaning is not necessarily more frustrating than later weaning. In a report of a study on the relation of cup feeding in infancy, to thumb-sucking and the oral drive, Sears and Wise (9) hypothesized that securing food by sucking increases the oral drive. Therefore, the longer the child's experience in sucking the greater will be the frustration reaction to weaning and the more likely it is that the child will suck his thumb. Their evidence tended to substantiate this hypothesis, with more thumb-sucking occurring in the late-weaning group.

Fourteen of our mothers (both groups) reported difficult weaning; of these fourteen, eight weaned late—indeed, as late as two years of age. Twenty-six mothers reported easy weaning; of these, eighteen were weaned during the first year of life, including one at three months of age. Like the children studied by Sears and Wise, our children did not necessarily find early weaning more difficult nor late weaning easy. The bulk of our easy weaning cases fell between ten and fifteen months.

We might also note here the observation by Sears and Wise that "The finding that early weaning causes less frustration reaction than late weaning does not conflict with any previously established facts. It has been commonly thought that Levy's (5) original finding of more thumb sucking in children who had inadequate sucking opportunity required the assumption of an inborn or primary oral (sucking) drive. This does not necessarily follow. All of Levy's subjects had been fed by sucking, and therefore they belonged in the 'middle'- or 'late'-weaned groups as these have been defined in the present study. Once a child has had his sucking drive strengthened by practice, the amount of substitutive sucking would be expected to increase with interference in nutritional sucking. This is what Levy found." (9, p. 137).

Our overdependent children then were weaned at approximately the same age as our control group and did not experience undue hardship in the weaning process, as reported by mothers. Data on onset of bladder training yielded the same results when means were compared. Overdependent children began bladder training at an average age of 10.9 months while our controls began at 10.7 months. The spread of the two groups, however, was quite different. We had more mothers at both extremes (early trainers, 6-8 months and late trainers over 14 months) in our overdependent group than in our controls. By and large the overdependent group who were overprotected made up the late trainees.

On the basis of our evidence concerning weaning experiences and onset of bladder training we rejected the hypothesis that overdependency results from a non-permissive approach to these particular infant disciplines. We will consider next evidence bearing on our second hypothesis.

Overdependency and Overprotection

Support for the hypothesis that overprotection may result in overdependency comes not so much from our research as from Levy's (6). In his study of 20 cases of maternal overprotection, he found 8 children who showed "an excessively submissive relation to the mother, are obedient to her, and very dependent" (6, p. 39). Where maternal control was lacking, as in 11 cases, an undisciplined child was the result. In other words, in those cases where overprotection and maternal domination are combined, the result is overdependency.

Our approach to the problem differed from Levy's in that our focus was on overdependency (which is child-oriented) whereas Levy's was on overprotection (which is mother-oriented). It was our thesis that *some* (not all) overdependent children are that way because of overprotection. These are the children whose parents *want* them to be dependent and whose dependent behavior is consistently encouraged (infantilization) and whose independent behavior is consistently punished or non-rewarded.

When we examined our cases for evidences of overdependency stemming from consistent overprotection, we found 6 children whose mothers met the criteria of Infantilization and Prevention of Independent Behavior. Data on these 6 cases are summarized in Table 2. The reader will note that these 6 cases met the criteria for Infantilization in two out of the three categories. Comments from the parent interviews have been included here to illustrate how mothers prevent the learning of independent behavior by their refusal to let the child play with other children, their extreme caution about physical needs, and their desire to keep the child physically close.

In sharp contrast to these 6 cases were our remaining 14 children who met the criteria for overdependency but who did not meet the criteria for overprotection. Two things seemed to distinguish this group. With respect to physical habits they were not dependent as was our overprotected group. They learned to feed themselves, to dress themselves, to tie their shoelaces and to help with chores around the house, activities which typically were done in the mother's presence or under her supervision. But when it came to doing things without the mother's presence these children were very dependent. They wanted the mother when they went to bed at night and when they went back and forth to school; they balked at activities such as playing outside the home which would take them away from her presence and they made a scene whenever the mother had to go out and leave them. It was the mother's presence they needed, rather than aid; they might be said to be emotionally dependent rather than physically.

TABLE 2

EVIDENCES OF OVERPROTECTION IN 6 OVERDEPENDENT CHILDREN

	Evidences of Infantilization			Evidences of Prevention of Independent Behavior
Case	*Onset of Weaning*	*Onset of Toilet Training*	*Independence in Dressing*	*Mother's Comments*
Eliza . . .	14 mo.	16 mo.	Mother dresses at 6 years	She's our only child and I've given all my time to her. She doesn't need other children. I watch her very carefully and don't let her do some things; that's why she's never had any accident.
Robert . .	14 mo.	16 mo.	Independent	He's mother's boy. I like him to stay close to me. That way I know what he's doing. I don't send him to kindergarten because they catch everything there.
James . . .	15 mo.	14 mo.	Mother dresses at 6 years	I don't send him on any errands. He's too small for that. They grow up and get away soon enough as it is. I know I give him too much time and attention but they're only young once.
Ronnie . .	15 mo.	9 mo.	Dependent	I've always kept him near me from the time he was born. Even when his younger brother was born he never seemed to need the attention this one does. I watch him pretty carefully and don't let him run with the others.
Louise . .	2 yrs.	16 mo.	Independent	I like to keep her with me. She always goes where I go. I like to raise her just right and if she gets to going with other kids she'll learn rough ways.
George . .	3 yrs.	14 mo.	Mother dresses at 6 years	His older brother is 27 years old. I guess I've spoiled him. I hated to send him to kindergarten, he seemed such a baby. I drive him back and forth to school each day. It's safer that way.

The other way in which our overdependent group which was not overprotected differed from the group which was had to do with maternal attitudes. The mothers' comments quoted in Table 2 show clearly that these mothers were interested in preventing independent behavior; they wanted dependent children. The mothers in our second group, on the other hand, were disturbed over the fact that their children were overdependent and they tried to force independent behavior. They had children in whom the dependency drive was so strong that the children made excessive demands upon the parent. To find why the drive in these children was so strong we looked not to maternal overprotection, but to the testing of the second part of Hypothesis 2, that discontinuity in the socialization process during the critical period in learning dependency might result in reinforcement of the dependency drive to the point where it is overly strong.

Overdependent Children Who Were Not Overprotected

From the life histories of our two groups of children as reported by mothers we attempted to arrive at some measure of the major adjustments these children had been called upon to make during the critical period. As indicated previously, there were four adjustments we defined as conducive of undue tension—loss of socializing agent; adjustment to new socializing agent; major change of physical environment; major illness. Three raters working independently arrived at an estimate of the number of major adjustments in each child's life. Agreement among raters was 82 per cent. Here are excerpts from parent interviews which illustrate data which were evaluated:

Case (John)

Lived with mother and grandparents for eighteen months. The father returned and family (minus grandparents) moved to different city. Mother reports "I give him all of my time and attention and so did his grandparents. He was terribly spoiled when his father returned. His father made me realize I'd been spoiling him so I tried to quit. It seemed the harder I tried, the more demanding the baby got."

Case (Jane)

Grandmother who lived nearby very fond of the baby from birth. Mother took the baby over to the grandmother's house every morning after breakfast to stay until late afternoon or evening. The grandmother loved caring for the baby. The mother who had her hands full with three other children and a husband who sometimes lived with the family but who deserted them often for long periods of time, liked this arrangement. Spent every day with grandmother until almost two years of age when grandmother died. Sibling born immediately after grandmother's death.

Case (Susie)

Father not in the picture; parents divorced. Mother lived in a home with the child for six months. Then moved to grandmother's. Mother went back to work and grandmother cared for child. Mother left town to work in another city when baby was nine months old. Came back for the baby and kept her for a while. At fourteen months child returned to grandmother's.

Case (Betty)

No moving about. Has always lived with both parents. Husband's father in bed and mother had to care for him so child didn't get much attention. Mother did the best she could—gave in to the child when she couldn't talk her out of something.

Case (Will)

Lots of attention the first year. Mother went back to work at fourteen months. Grandmother came to live with family and care for child. Regression in toilet training at this time.

Case (Sarah)

Lived with mother and grandparents first six months. Then from pillar to post, following father in army camp for six months. New sibling when child one year old.

Case (Shirley)

Seven moves in six years. Mother's mother lived with them for eighteen months while father in service; gave child lots of time and attention. Mother out of home a good deal—working or with husband at camp. Grandmother died at eighteen months.

Case (David)

Lived with maternal grandparents seven months while father in service, then paternal grandparents till eighteen months, back to maternal grandparents till father's final return at twenty-two months. Sibling at twenty-four months. Mother did not get along with paternal grandparents and much dissension over child.

Case (Katherine)

Moved seven times during first three years. Father in service, out of service, in service again. Child given all mother's time and attention when father away; mother devoted herself to father when he was present.

Case (Lulu)

No discontinuities in early life. Father in service but mother maintained home while he was away.

Case (Bob)

Mother went back to work when child was less than a year old. Casual care from that time until two. Parents separated at two; child went to live with grandparents. Mother now in another city.

Case (James)

No discontinuities in early life. Always lived with parents. No siblings. Mother always home.

Case (Barnie)

First ten months of life fairly regular; father away, lived with his sister. Next ten months of life very irregular. Mother left child with grandparents at ten months, went to husband's camp. Returned; child and mother moved back with husband's sister. Mother took a job. Pattern repeated five times until father returned at twenty months.

Case (Lee)

Father in service when child was born. Lived with maternal grandparents. Mother a daughter rather than a mother. Grandmother played role of mother. Father hospitalized; home for visits; when dismissed, mother, father and child set up own home. Sibling born just prior to father's final return. Lots of time and attention while with grandparents. Father upon return complained child was spoiled and insisted upon his being more independent.

When number of discontinuities in our two groups was compared, we found that our 14 overdependent children who were not overprotected experienced an average of 3.9 major adjustments. In fact, 11 out of our 14 children in this group had suffered storm and stress during the critical period for the learning of dependency. By contrast, our control group yielded an average of 1.3 discontinuities, with only 6 children in the group affected during the critical period. The evidence is clearly in the direction of major adjustments faced by the child from 9 months to 3 years as contributing to the strengthening of the dependency drive.

One additional factor should be noted. The mothers of our overdependent children tended to be less consistent in dealing with behavior difficulties than the mothers of our controls. In response to questions concerning their handling of children's demands, these mothers reported, "I held out as long as I could; then I gave in to him, if I had to. Sometimes I won; sometimes he won." Sometimes, in other words, the child's dependency demands were rewarded and sometimes they were not. As we have already indicated, responses which are inconsistently reinforced are difficult to extinguish.

However, it should be pointed out that the child who is experiencing undue tension in his life is going to turn to the socializing agent for tension-release (provided he has learned dependency) *more often* than the child whose life proceeds with only normal frustrations. Even without an overprotecting mother or an inconsistent one he is likely to receive more help and attention from his mother (unless she is a rejecting parent) simply because he asks for more. His dependency drive stands a better chance of being strengthened through reinforcement than the child who doesn't ask for as much help, but who gets satisfaction in doing things by himself.

Family Factors in Overdependency

The question is frequently raised by parents as to whether or not more only children are overdependent than children with siblings. On the surface it would appear logical to assume that the mother of an only child would have more time to satisfy her child's dependency demands than the mother of six children. While our sample was not big enough to adequately test this hypothesis, nevertheless it would appear that size of family per se is not an all-important factor. We had but 4 only children in our experimental group; we also had only children among our controls. We had one overdependent child who came from a family of five children and whose busy mother still found time to give her the time and attention she wanted. Family size in both groups averaged between two and three children.

Presence of the father, however, particularly during the critical period, would seem to be an important factor influencing dependency learnings. Of our 20 overdependent children, 13 lacked the continual presence of the father in the home during the first three years of life. In two other cases, the father while present in the home was a weak socializing influence. In our control group, only 6 of the children had experienced the temporary absence of the father and then only for a short time.

It is easy to understand how a father's presence might influence the learning of overdependency. The American father typically discourages dependency in his children (particularly the male child) and encourages independence. He keeps the mother from reinforcing dependency by his warnings—"You're making a baby out of him," "You're spoiling him by giving in so much,"—and he also teaches independence positively by encouraging the child to stand on his own feet—"You can do it, Pat." "Let's see what a big girl you are now to help Mother." Furthermore because he is away from home for a large part of the child's waking hours and therefore not as closely involved in the socializing process, he can be more objective about it. It is possible for him to note dependency trends that might go unnoticed by a mother who does not have the help of an interested but perhaps more objective participant.

CONCLUSIONS

Our evidence leads us to seriously question whether certain of the infant disciplines such as early weaning, difficult weaning or toilet training will result in overdependency. Our study did yield further data to support Levy's thesis that overdependency can result from maternal overprotection. However we also found evidence to support our thesis that overdependency can result from serious discontinuities in the socialization process during a critical period (9 months to 3 years) in learning dependency.

This last finding raises the question as to the extent that babies should be protected from discontinuity. Should the chance for a Fulbright year in Paris be postponed because it might have an adverse psychological effect upon Junior? Obviously the answer is no. A father who comes and goes, a grandmother's death, a mother going back to work or a major change in physical environment does not *have* to result in an overdependent child. However, mothers need to be prepared for the fact that major upheavals during the critical period *will* result in the child's turning more and more to the socializing agent for help. It is how the mother handles the increased dependency demands that determines whether or not the child will be overdependent. If she is inconsistent and sometimes says yes but sometimes says no to the same demands, the drive will be strengthened. If she always says yes the drive will be strengthened. Where the child is facing a major adjustment, the mother should recognize that he needs more help from her and she should be prepared to give it. But she should also watch for those behaviors where the child is showing independence. By rewarding these with her approval and praise she can reinforce the drive for independence. And as doing things for himself becomes more and more pleasurable to the child, his dependency demands will decrease.

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THE ADJUSTMENT OF TWO-YEAR-OLDS IN A NOVEL SOCIAL SITUATION[1]

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An important indication of social adequacy in young children is their readiness to cope with situations away from home when their mothers and other family members are absent. This study is concerned with the adjustment of two-year-olds to the experience of being separated from home and mother and driven to a nursery school. The situation the children faced involved being taken from home by a woman who was a stranger to them and riding away with other children who were also strangers. This experience not only called for adjusting to a novel social situation but also required the children to face it without the security-giving presence of their mothers.

Novel situations tend to be threatening to children, although the reasons for this are not well established. Arsenian (1) proposed that novel situations make children insecure both because their perceptions of the situation are relatively "unstructured" and because they are uncertain of their capacities to deal with problems which may arise in the situation. Obviously, with repeated experiences in a situation, feelings of insecurity associated with novelty are replaced by feelings of security or insecurity which reflect rewarding or punishing aspects of those experiences.

Usually, a young child's mother is his primary source of security in coping with problem situations since she has been involved in meeting his needs in a great variety of situations and since the child can predict her reactions to him with considerable success. Arsenian (1) demonstrated the security-giving value of the mother's presence in her study of children's reactions to being in a strange room. She found that insecurity was highest

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when the children were alone in the room, less when a familiar "mother substitute" was present, and least when the child's mother was present. Liddell (8) demonstrated a similar phenomenon in goats in a study which compared responses of kids in an experimental situation with and without the mother goat being present.

The current study has four purposes: (*a*) to offer a measure of emotional upset in children on the trip to nursery school, (*b*) to examine age differences in upset by comparing responses of younger and older two-year-olds, (*c*) to relate trip upset to measures of social adequacy in nursery school play, and (*d*) to investigate relationships between trip upset and certain characteristics of home atmosphere and maternal behavior.

In a study reporting data from Harvard's Center for Research in Child Health and Development, Shirley (10) employed an eight-step behavior rating scale to measure adjustment during the trip to the Center. In the present study an eighteen-item behavior check-list was used to provide a more specific and more objective record of upset responses than Shirley obtained.

In a previous study with grade school children (5), the writer found age differences in adjustive responses to a novel physical threat situation were minimal on the first experience with the situation when novelty was maximal. On later trials, age differences were larger and favored the hypothesis that, once children know what to expect in a situation, older children adjust better than younger children through applying knowledge and skills derived from their more extensive previous experiences. Arsenian, however, did not find such age differences in children ranging from eleven to thirty months of age during repeated experiences with a strange situation. Shirley suggested that older children may be less adjusted than younger children on repetitions of a "dreaded" situation since their "increased maturity" may make them more aware of the hazards they are about to experience again. The present study offers an opportunity to examine age differences in adjustment to a repeated situation with children ranging from 23 to 37 months of age.

If upset on the trip to nursery school is an indication of general social inadequacy, it should predict social inadequacy in situations such as nursery school play. In a previous article (6), the writer offered a number of measures of nursery school behavior which were interpreted as signs of social inadequacy. According to the analysis presented in that article, social inadequacy is shown in children who are inactive a relatively high proportion of the time, who play relatively little with other children, and who are relatively unassertive when interacting with other children. Also, social inadequacy may be shown through an emphasis on "passive" or "infantile" dependence on teachers or children in the form of clinging or affection seeking rather than in the form of attention or approval seeking. The present study tests the prediction that high trip upset is associated with high social inadequacy in nursery school play as indicated by the measures referred to above.

During the child's earliest years, home influences are paramount in preparing him to adjust to various situations. The present study examines relationships between upset on the trip to nursery school and four aspects of the home environment: harmony in the home, sociability of the family, maternal warmth and maternal indulgence. These were rated on the Fels Parent Behavior Rating Scales (3, 4).

Assuming that *harmony in the home* is conducive to emotional security in the child, it was predicted that children from relatively well-adjusted homes would be less upset on the trip to nursery school than children from relatively maladjusted families.

Sociability of the family, involving contacts with people outside the family, was assumed to provide children with opportunities for learning to adjust to novel social situations. Accordingly, it was predicted that high sociability of the family would be associated with low upset on the trip to nursery school.

Most students of personality development assume that *maternal warmth,* as expressed in acceptance of the child, in affectionateness or in approval, is conducive to general security and adequacy in the child. Evidence in support of this assumption was offered by Shirley (10) who reported that children whose mothers were rejecting were more upset than other children while facing test situations in the absence of their mothers. However, in his study of the effects of home environment on children's social behavior, Baldwin (2) failed to find significant relationships between maternal warmth as rated with the Fels scales and aspects of nursery school behavior. The present study offers a further test of the prediction that maternal warmth favors emotional adequacy of children in facing novel social situations.

The effects of *maternal indulgence* were studied extensively by Levy (7) who found that overprotected children tended to be socially inadequate and characterized by sensitivity, shyness and dependence on their mothers. Shirley (19) reported that overprotection tended to produce inadequacy in facing test situations. Levy interpreted the positive relationships he found between overprotection and social inadequacy as resulting from limitations placed on the child's opportunities for learning to cope with situations by himself.

With ratings employing the Fels scales, predicting the effects of maternal indulgence is complicated by the fact that the three measures of indulgence —babying, protectiveness and solicitousness for the child's welfare—are positively correlated with measures of maternal warmth. Insofar as maternal indulgence reflects restricted social learning experiences, one would predict a positive relationship between indulgence and upset in novel social situations. Insofar as indulgence expresses a kind of maternal warmth, a negative relationship would be predicted. It follows that the relationship between Fels ratings of maternal indulgence and upset on the trip to nursery school may be negative, zero or positive depending on the relative strengths of the two opposed factors.

SUBJECTS

The subjects were 31 children who attended the nursery school at the Fels Research Institute daily for four weeks as members of two-year-old groups either in 1949 (seven children), 1950 (nine children), 1951 (ten children) or 1952 (five children). At the time of the nursery school visit, the children's ages ranged from 23.1 to 37.1 months, with a median age of 29.0 months. The seventeen boys had a mean age of 29.2 months, the fourteen girls, 28.8 months. The children were of middle-class origin with their fathers engaged in farming, skilled trades and the professions. The children's IQs (Revised Stanford-Binet, Form L, administered at thirty months of age) ranged from 100 to 167 with a median of 120.

METHOD

Measuring Trip Upset

One requirement for collecting trip upset data was that the circumstances of the trip to Fels be as similar as possible for the different children. With this requirement in mind, the child's mother was asked to part with him at the door and to let the Fels Trip Observer take him out to the car. The Trip Observer, insofar as possible, followed a standard procedure in taking the child to the car, supervising him during the trip, and taking him into Fels. The car was driven by a Fels staff member who had minimal interaction with the children during the trip.

The children had some basis for anticipating what was in store for them since their mothers told them they were going to nursery school and tried in their own ways to prepare their children for the new experience. All the children were familiar with Fels since they had had physical, medical and psychological examinations at Fels when three months old and, beginning at six months, at semi-annual intervals. On the occasion of these visits, their mothers had accompanied them.

In recording her observations, the Trip Observer filled out a check-list which contained behavioral items relevant to the child's adjustment while leaving home and mother and riding to Fels. Separate sections of the check-list covered behavior from home to car, during the first five minutes in the car, and upon arriving at Fels and entering the building.

On each of the first five days of nursery school, the child's reactions during the trip were checked in terms of the eighteen indicators of upset listed below.

When taken from home to car

1. Cries
2. Hides, tries to hide, etc.
3. Resists getting dressed to go
4. Clings to mother
5. Calls for mother
6. Tries to go back to house
7. Must be carried to car
8. Resists being carried to car

During first five minutes in car

9. Cries
10. Calls for mother
11. Seeks reassurance or comforting
12. Resists reassurance or comforting
13. Tense, withdrawn or unresponsive

When arrives at Fels and enters building

14. Cries
15. Resists leaving car
16. Must be lifted out, carried
17. Clings to Trip Observer
18. Holds back, reluctant to enter Fels

The child's upset score for each day was the number of the items which were checked. While this method yielded a very crude measure of upset, it had the advantage that the college students available as Trip Observers could be counted on to use the method with reasonable success. Regular Fels staff members could not be employed as Trip Observers because they would not have been strangers to all of the children.

Measuring nursery school behavior

One purpose of this study was to relate trip upset to the children's nursery school behavior. In connection with research on emotional dependence and independence, detailed time-sample observations were made of each child's behavior in the nursery school. These observations were scored in terms of fourteen behavioral categories which involved types of play activities and various forms of dependent and independent responses. The method of observing and scoring these responses was described in a previous report (6). Data involving nine of the fourteen categories of response are used in the present study.

Measuring Home Influences

To obtain ratings of home environment, the Fels home visitor conducted a two-hour visit to the child's home within the two-week period prior to the child's visit to nursery school. The home visitor observed the mother's interaction with the child and interviewed her on topics related to the child's experiences and behavior. On the basis of this visit, the home visitor employed the Fels Parent Behavior Rating Scales to rate general aspects of the home environment and aspects of the mother's ways of relating to the child. These scales, and the method of making and scoring ratings, have been described in previous publications (3, 4). In this study, ratings with nine of the thirty scales were used as measures of harmony in the home, sociability of the family, maternal warmth and maternal indulgence.

TABLE 1

MEAN UPSET SCORES ON DAILY TRIPS TO FELS FOR SUBGROUPS IN TERMS OF SEX AND AGE AND FOR THE TOTAL GROUP OF 31 TWO-YEAR-OLDS

		MEAN UPSET SCORES					
Group	*N*	*Day 1*	*Day 2*	*Day 3*	*Day 4*	*Day 5*	*Days 1–5*
Boys	17	4.18	4.06	3.06	3.00	2.71	17.00
Girls	14	4.64	3.50	2.07	.86	.79	11.86
Younger	18	3.17	3.56	3.00	2.22	1.61	13.56
Older	13	6.08	4.15	2.08	1.77	2.15	16.23
Total	31	4.39	3.81	2.61	2.03	1.84	14.68

RESULTS

Trip Upset Scores

Individual differences. Differences in daily upset scores for individual subjects ranged from zero to thirteen. Total upset scores for all five days ranged from zero to fifty with a median of twelve. As an indication of day-to-day consistency of individual differences in upset scores, the rank-difference correlation (*rho*)[2] was computed between combined scores for Days 1, 3 and 5 and for Days 2 and 4. The coefficient of +.81 indicates a relatively high reliability.

Day-to-day changes. Table 1 presents mean upset scores for age and sex subgroups and for the total group of subjects. The table indicates that, for the total group, mean upset scores were lower each succeeding day. Comparing Day 1 with Day 5, twenty-one children had lower scores on Day 5, six had the same score on both days, and four had higher scores on Day 5.

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[2] Woodbury's correction for tied ranks (11) was used in determining all rank-order correlations in this study.

The proportion of children with lower scores on Day 5 was significant within the .01 level of confidence.[3]

Several explanations might be offered to account for the decline in upset scores. To the extent that upset was a function of the novelty of the situation, it should have declined from day to day as the situation became more familiar. Another explanation relates upset to expectancies of positive or negative reinforcements on the trip or in the nursery school. According to this explanation, if the trip to Fels and experiences in the nursery school were predominantly security-giving or pleasurable, expectancies of positive reinforcement would have been established and upset would have lessened with repeated experiences in the situation. Finally, upset responses may be interpreted as attempts to avoid the situation, as when a child cried or clung to its mother in trying to avoid leaving home. Since, in this study, these attempts were unsuccessful, it may be assumed that such control devices would have been used less and less on successive days.

Sex differences. As shown in Table 1, the boys had a considerably higher mean upset score than the girls (17.10 as compared to 11.86). However, this difference was not statistically significant. It is noteworthy that the median upset scores for boys and girls were almost equal (12.0 for the boys and 11.5 for the girls). Also, it should be noted that both subgroups had almost equal upset scores on the first two days' trips. The higher average scores for the boys on Days 3–5 resulted mainly from the high scores of three boys.

Trip upset and intelligence. The correlation (*rho*) of total trip upset scores with Binet IQ was —.17, an insignificant relationship.

Age Differences in Trip Upset

To determine age differences in upset, the subjects were divided into younger and older subgroups each with an age range of seven months. The eighteen younger children ranged in age from 23.1 to 29.9 months, the thirteen older children, from 30.0 to 37.1 months. Daily and total upset scores for the subgroups are given in Table 1. An unanticipated finding was the markedly greater upset shown by the older group on the first day's trip. The correlation (*rho*) between age and upset on Day 1 is +.38, significant within the .04 level of confidence.[4] The reasons for this age difference on the initial trip to nursery school are not apparent. A plausible explanation takes account of the fact that the Fels physical growth and medical examinations are unpleasant for many young children. Since the older children in the present study had been subjected to these examinations one or two times more often than the younger children, they had had more opportunities to associate going to Fels with these negatively-reinforcing experiences and so might have been expected to show more upset on the first day's trip to nursery school. Another reasonable explanation of the age differences found on Day 1 follows Shirley's proposal that three-year olds, as compared to children of two or two-and-one-half, have better developed capacities to anticipate situations and to express apprehension regarding prospective experiences (10).

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[3] The significance of the proportion was determined using the formula $P=\sqrt{pq}\,/\,N$.

[4] The significance of rank-difference correlations was determined using Olds' method (9). Since his Table V includes values for $N=30$ but not for $N=31$, a method of extrapolation was used to determine the approximate values for $N=31$.

Results for Days 2–5 were consistent with the prediction that older children would show a greater decrease in upset as a result of a given number of experiences in a situation than would younger children. Despite the fact that the older children had almost twice as high a mean upset score as the younger children on Day 1, their total mean score for Days 2–5 (10.15) was almost the same as with the younger children (10.39). On Days 2–5, the correlation (*rho*) between age and total upset score was —.05.

Trip Upset and Nursery School Behavior

Rank difference coefficients of correlation were calculated for the relationship between trip upset and nine measures of nursery school behavior presumably related to security or inadequacy in social contexts. These were as follows:

Not playing: alone and inactive; usually watching others[5]	+.39 *
Social play: structured interaction with child, sharing play materials, conversing, etc.[5]	—.47 **
Structures child's play: tells other child what to do[6]	—.32
Interferes with child's play: takes toys from child, blocks his play, etc.[6]	—.51 ***
Resists child's interference or aggression: complains, struggles, counter-aggresses[7]	—.38 *
"Passive" dependence on teacher: clings, seeks affection[6]	+.14
"Passive" dependence on child: clings, seeks acceptance, not as part of social play[6]	+.18
"Assertive" dependence on teacher: seeks attention or approval for accomplishments[6]	—.19
"Assertive" dependence on child: seeks attention or approval for accomplishments[6]	—.39 *

(*** designates significant at the .01 level of confidence, ** designates significant at the .02 level of confidence, * designates significant at the .04 level of confidence.)

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[5] Score is proportion of minutes of observation when this variable was noted.

[6] Score is instances per minute of observation when this variable was noted.

[7] Score is per cent of instances of interference or aggression by another child to which the child offered resistance.

The direction of the relationships shown above support the prediction that trip upset and social insecurity or inadequacy in nursery school play are positively correlated. Children with high trip upset scores were inactive more of the time in the nursery school and engaged in social play less than other children. Also, they tended to show less social assertiveness in the form of structuring other children's play, interfering with other children, and resisting other children's attempts to dominate them.

While only one of the four measures of emotional dependence in nursery school play was significantly related to trip upset, the direction of the correlations with all four variables supports the prediction that upset is associated with "passive" or "infantile" forms of dependence rather than with more "assertive" expressions of dependence in the form of seeking attention or approval.

Trip Upset as Related to Home Influences

Rank difference coefficients expressing the relationship between trip upset and nine variables of home atmosphere or maternal behavior as rated with the Fels Parent Behavior Rating Scales were as follows:

Home Atmosphere	
Adjustment of home (well-adjusted—maladjusted)	—.46 **
Discord in the home (conflict—harmony)	+.31
Sociability of family (aggressive—reclusive)	—.18
Maternal Warmth	
Affectionateness (affectionate—hostile)	—.25
Direction of criticism (approval—disapproval)	—.12
Acceptance of child (devotion—rejection)	—.29
Maternal Indulgence	
General babying (overhelps—withholds help)	+.11
General protectiveness (sheltering—exposing)	—.05
Solicitousness for child's welfare (anxious—nonchalant)	—.13

(** designates correlation significant at the .02 level of confidence.)

The correlations involving the three *home atmosphere* and three *maternal warmth* variables were all in the predicted direction. Adjustment, harmony (non-discord), and sociability of the family all were associated with low upset on the trip to Fels. Also, maternal acceptance, affection and approval were negatively related to trip upset. However, only one of the six correlation coefficients was statistically significant. This was the relationship of —.46 between trip upset and *Adjustment of Home* which was significant within the .02 level of confidence.

The three *maternal indulgence* variables—babying, protectiveness and solicitousness—were virtually unrelated to trip upset. This finding is consistent with the interpretation offered earlier in this paper that maternal indulgence, as rated on the Fels scales, involves two factors—warmth and restriction of learning experiences—which lead to opposite predictions with respect to trip upset. In fact, each of the indulgence variables was positively correlated with each of the warmth variables, the coefficients (*rho*) ranging from +.28 to +.57. The data of this study were insufficient to permit partialling out the warmth factor in determining the correlation of maternal indulgence with trip upset.

Discussion

The present study must be considered as exploratory because of the small number of cases and the inadequate control of variables which probably affected the children's adjustment on the trip to nursery school.

The check-list method employed to measure adjustment during the trip to nursery school has the advantages of simplicity and objectivity and yielded a good level of day-to-day reliability. The method requires further development through item analysis of the indicators of upset and through determining inter-observer reliability.

Both in Shirley's study and in the present one there was evidence that children of about three years of age show more upset in novel social situations than children of about two-and-a-half years. Shirley proposed that this was because, at about three years of age, children "are beginning to develop anticipation and apprehension" (10, p. 212). This suggestion merits intensive study.

Both in the study reported here with nursery-school children and in the writer's previous study with grade school children, older children adjusted more quickly to novel situations than younger children after the first experience with the situation. The fact that these age differences were not found on the first experience with the situation favors the interpretation of adjustment to novel situations in terms of expectancy theory. On the first trial in a situation, when novelty is maximal, older children cannot apply any advantages they hold over younger children in adjustive capacities since they do not know what to expect in the situation. Such advantages do apply to later experiences with the situation.

This study contributes little toward indicating the sources of individual differences in adjustment to novel situations. The fact that correlations between ratings of home influences and upset scores were generally low and statistically insignificant may be evidence of low validity of the Fels Parent Behavior Rating Scales as predictive instruments. This is a reasonable interpretation, considering that the ratings employing the Fels scales were based on one two-hour period of observing mother and child in the home.

Much more extensive observation of home influences would be required to provide adequate data for testing the relations between the child's experiences at home and his behavior in situations outside the home.

SUMMARY

1. This paper reports an exploratory study of the adjustment of thirty-one two-year-old children to the novel experience of being taken from home and mother by an unfamiliar woman and driven to nursery school with other children who were strangers.

2. The children's adjustment during the trip to nursery school was measured by a check-list which included eighteen behavioral items judged to be indicative of upset. Trip upset was measured on each of the first five days the children attended nursery school.

3. Individual upset scores for the five days ranged from zero to fifty. Individual differences in upset were consistent from day to day. Sex and intelligence were not found to be significant factors in upset.

4. There was a reliable decrease in trip upset scores from first to fifth days. Alternative explanations for this decrease were suggested.

5. On the first day's trip, older two-year-olds showed reliably more upset than younger ones. This was interpreted in relation to expectancies of negative reinforcement associated with the trip. On succeeding days, the older children showed a greater decline in upset than the younger ones. This was interpreted as evidence that the older children had greater capacities to adjust to the situation than the younger children, once they had experienced the situation and knew what to expect.

6. The assumption that trip upset was evidence for general social insecurity was supported by positive correlations between trip upset and measures of social inadequacy in nursery school play.

7. Evidence was presented to suggest that harmony of the home, sociability of the family and maternal warmth favored adjustment on the trip to nursery school. However, these findings, except with respect to the variable *Adjustment of Home* were not statistically significant. Maternal indulgence at home, as shown by babying, protectiveness or solicitousness for the child's welfare, did not appear to be related to adjustment on the trip.

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ROLE-WISHES AND GENERAL WISHES OF CHILDREN AND ADOLESCENTS

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Wishing is a favorite pastime in our culture and is allowed considerable latitude. Children are permitted, even encouraged, to make and express wishes beyond the limits of allowable actions and demands, and beyond the limits of probable attainment. Wishes are goal-directed and express values. They indicate areas of dissatisfaction and levels of aspiration in the life-space of the wisher. They constitute an as yet insufficiently exploited resource for knowledge of child and adolescent development.

Most studies of children's wishes have been based on an essentially unstructured form of request in obtaining responses. The child is asked, in somewhat varying ways, to state what he would wish if his wishes could come true. In general, the analysis of responses has shown a high frequency of wishes for material objects and possessions, decreasing with age and being replaced by wishes for more general and inclusive benefits for self and others; a tendency for wishes to be predominantly extrovert rather than introvert, with a low incidence of wishes relating to personal shortcomings (4, 5); and a tendency for wishes to be concrete and realistic rather than abstract and irrealistic, but becoming more general with increasing age (4, 5, 9, 10, 11). Sex differences have been found indicating a higher interest among boys in personal achievement and possessions, and among girls in social and family relationships (4, 11).

It may be suspected, however, that wish responses are influenced by the form of request and by conditions under which responses are obtained. Boynton (1) and Gray (2), for example, asked the children what they would ask for if they could "have anything they wanted." The responses were overwhelmingly in terms of material objects and possessions. Children's birthday wishes for their friends were collected by Wilson (6, 7), who interpreted these as projected wishes for self. His findings yielded significantly higher frequencies of wishes relating to vocations, activities and general benefits for self and fewer wishes for specific objects and possessions than were obtained from comparable groups in other studies (e.g., see Jersild, 4). Furthermore, the low frequency of some responses (e.g., relief from personal shortcomings, to be smarter, better looking, etc.) may not be indicative of the strength of these interests, but a function of the form of the request. This might hold in general with respect to the introversion–extroversion ratio of wishes. Other variables might include the mode of response, whether oral or written, and the degree of subject anonymity.

Procedure

The present paper reports some results of a pilot application of a method of securing and classifying samples of wishes by older children and adolescents in which the reference of the wish is varied and the form of wish expression is also varied in relation to the area of reference.

Wish samples were obtained from 1809 public school pupils from the fourth through the twelfth grades in Sioux Falls and Vermillion, South Dakota. Comparable numbers of males and females from the various grades were included. For the present report, the grades were grouped in the following way: elementary grades 4, 5, 6, in which both sexes are predominantly prepubescent; junior high school grades 7 and 8, where girls are predominantly pubescent; high school grades 9 through 12, where boys also become predominantly pubescent.

Instead of asking the children simply to state what they most wished for, a sheet was prepared consisting of the following 24 open-ended statements directed towards salient areas of personal and interpersonal experience:

1. I wish I were ....
2. I wish I were not ....
3. I wish I could ....
4. I wish I did not ....
5. I wish I had ....
6. I wish my folks were ....
7. I wish my folks would ....
8. I wish my mother would ....
9. I wish my mother did not ....
10. I wish my father would ....
11. I wish my father did not ....
12. I wish my family lived ....
13. I wish our home were ....
14. I wish our home were not ......
15. I wish my brother(s) ....
16. I wish my sisters(s) ....
17. I wish my teacher(s) were ......
18. I wish my teacher(s) would .....
19. I wish my teacher(s) did not ....
20. I wish .... friends
21. I wish my girl friends ....
22. I wish my boy friends ....
23. I wish my best friend ....
24. I wish more than *anything* that ..

These statements were completed by the subjects under the direction of their own previously instructed classroom teachers. Instructions to the teachers emphasized permissiveness and anonymity as means of securing candid responses. Supplementary data identified only the sex, age, grade and school of the respondent. Teachers were asked to report on the apparent attitudes of the children towards the task.

In tabulating responses, erasures were restored and used wherever possible, on the assumption that they would, in most instances, represent suppressed primary wishes. How many other primary wishes may have been suppressed cannot, of course, be known. Reports of teachers with respect to the subjects' manifest attitudes, however, together with internal evidence, leaves little doubt that the vast preponderance of responses were seriously made. Not all items were completed by all subjects, and some subjects expressed more than one wish on a specific item.

FINDINGS

The first phase of analysis of the obtained material consisted of classification with respect to content, item by item, with computation of frequency distributions and comparison of sex and grade groups. We present here some findings from the content-classification of two wish items: Item 1, "I wish I were . . .," and Item 24, "I wish more than *anything* that . . .." The former constitutes a self-directed wish the form of which presumably places emphasis upon role; the latter is unstructured and is equivalent to the instruction most frequently used by previous investigators.

Responses to the item "I wish I were . . ." numbered 1806 separate wishes, 837 from 775 boys, 969 from 864 girls. The item was left blank by 91 boys and 76 girls. There was a total of 167 second or third wishes which are included in the following computations. Sorting yielded 46 content categories, grouped under nine general reference headings. Table 1 gives the percentage distribution for boys and girls in each grade group in order of total frequencies in gross categories for all subjects combined.

Rank-order correlations between boys and girls and between grade groups for relative frequencies shown in Table 1 on both content and general reference categories were positive and significant in all cases. With one

TABLE 1

PERCENTAGE DISTRIBUTIONS OF RESPONSES BY GRADE-GROUP AND SEX ON ITEM 1: "I WISH I WERE . . ."

	Elementary		Junior High		High School		All Grades	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*
Classification *N* =	240	259	358	381	239	329	837	969
I. *Personal Achievement*	*40.4*	*28.2*	*38.0*	*17.8*	*39.8*	*22.5*	*39.2*	*22.2*
1. Athletic Career	2.0	0	2.5	.5	3.4	.3	2.6	.3
2. Professional Career	5.4	15.5	3.1	7.6	7.5	5.2	5.0	8.9
3. Religious Career	.4	.8	.3	.8	0	.3	.2	.6
4. Business Career	1.3	0	.8	0	2.5	.3	1.4	.1
5. Artisan Career	3.3	1.6	4.2	1.6	1.3	4.6	3.1	2.6
6. Action-Daring Career	13.8	2.3	10.6	1.6	6.8	2.1	10.4	1.9
7. Theatric Career	1.3	3.9	1.1	1.0	1.2	2.7	1.2	2.4
8. Farm Career	3.3	0	3.1	.3	5.4	0	3.8	.1
9. Artist Career	1.7	1.9	1.4	1.8	.4	1.8	1.2	1.9
10. Misc. Vocation	0	0	0	0	.8	.9	.2	.3
11. Earn More	0	.4	2.0	1.3	3.8	4.3	1.9	2.0
12. Better in Sports	7.9	1.9	8.9	1.3	6.7	0	8.0	1.0

(*table continued on next page*)

TABLE 1 — *continued*

		Elementary		Junior High		High School		All Grades	
		Male	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*
Classification	*N*=	240	259	358	381	239	329	837	969
II. *School*		*15.4*	*15.8*	*22.9*	*26.3*	*21.3*	*23.4*	*20.3*	*22.5*
13. Out of School		3.7	1.9	5.0	4.7	10.0	9.1	6.1	5.5
14. Higher Grade		1.7	4.2	6.1	6.1	2.9	5.5	3.9	5.4
15. Smarter		7.9	6.2	10.1	13.1	7.1	8.2	8.6	9.6
16. Special Activity		1.7	3.1	1.4	2.1	.4	0	1.2	1.6
17. Miscellaneous School		.4	.4	.3	.3	.9	.6	.5	.4
III. *Personal-Social Relations*		*9.2*	*14.7*	*5.3*	*16.5*	*15.1*	*27.4*	*9.2*	*19.7*
18. Morally Better		5.0	6.2	3.1	2.9	3.3	4.0	3.7	4.1
19. Religiously Better		0	.4	.3	0	1.7	.9	.6	.4
20. Happier		.4	.8	0	.5	1.3	1.5	.5	.9
21. More Popular		2.1	2.3	.6	7.9	3.8	7.9	1.9	6.4
22. Socially at Ease		0	.8	.6	1.6	.9	3.7	.5	2.1
23. Independent		1.3	1.2	.6	1.0	0	.6	.6	.9
24. Better Personality		.4	0	.3	1.8	2.1	3.3	.8	1.9
25. Love, Marriage		0	2.7	0	.5	1.3	4.3	.4	2.4
26. Misc. Personal-Social		0	.4	0	.3	.8	1.2	.2	.6
IV. *Physical Appearance*		*4.2*	*10.8*	*10.6*	*17.1*	*5.0*	*10.0*	*7.2*	*13.0*
27. Smaller		.8	2.7	0	4.5	0	3.0	.2	3.5
28. Bigger		2.1	2.3	7.8	3.9	3.0	1.2	4.8	2.6
29. Better Looking		.4	5.4	.6	7.4	1.2	5.8	.7	6.3
30. Healthier		.4	.4	1.4	.3	.4	0	.8	.2
31. Misc. Phys. Appearance		.4	0	.8	1.0	.4	0	.6	.4
V. *Age*		*7.5*	*9.3*	*10.1*	*10.7*	*5.0*	*5.8*	*7.9*	*8.7*
32. Older		6.7	8.9	9.8	9.9	4.1	5.5	7.3	8.2
33. Younger		.8	.4	.3	.8	.9	.3	.6	.5
VI. *Identity*		*7.9*	*11.2*	*2.2*	*5.8*	*2.9*	*3.7*	*4.1*	*6.5*
34. Same as I Am		2.5	3.9	.6	1.1	1.7	.9	1.4	1.8
35. Dead		.4	.4	0	0	.4	0	.2	.1
36. Different Sex		.8	2.7	0	3.9	0	2.1	.2	3.0
37. Different Species		2.9	1.2	.6	0	0	0	1.1	.3
38. Specific Person		0	1.5	.8	.5	.4	.6	.5	.8
39. Imaginary		.4	1.2	.3	0	.4	0	.4	.3
40. Misc. Identity		.8	.4	0	.3	0	0	.2	.2
VII. *Living Situation*		*7.5*	*7.3*	*5.0*	*3.1*	*4.2*	*3.9*	*5.5*	*4.5*
41. At Home		1.3	1.5	1.4	1.0	.4	.3	1.1	.9
42. Other State, Town		3.3	3.1	1.4	1.8	2.9	2.7	2.4	2.5
43. On Farm		1.3	.8	1.7	0	0	0	1.1	.2
44. Misc. Living Situation		1.7	1.9	.6	.3	.8	.9	.9	.9
VIII. *Possessions*		*4.6*	*.4*	*2.5*	*1.3*	*5.8*	*2.1*	*4.1*	*1.3*
45. Rich		4.6	.4	2.5	1.3	5.8	2.1	4.1	1.3
IX. *Unclassified*		*3.3*	*2.3*	*3.4*	*1.3*	*.8*	*1.2*	*2.6*	*1.6*
46. Unintelligible, Irrelevant, Flippant		3.3	2.3	3.4	1.3	.8	1.2	2.6	1.6

exception, *rho*'s were higher in the general reference than in the specific content categories for compared groups. The coefficients of correlation are reported in Table 2.

Comparing the distributions by *chi-square*, however, yielded highly significant sex and grade differences in the frequencies of specific categories. Boys consistently wished for personal achievement and possessions (in this case, to be rich) more frequently than did girls; while girls' wishes consistently fell into the personal-social, physical appearance and identity categories more frequently than those of the boys. Both boys and girls showed a peak of wishes relating to school, physical appearance and age during the junior high period, subsequently declining in high school; personal achievement and identity were highest in the elementary group, while personal-social relations achieved their greatest importance in high school.

On specific content categories, boys and girls equally wished they were smarter, older, out of school and morally better, in that order of frequency. Boys, more than girls, wished they were in an action-daring career, excelled in sports, were bigger, and rich. Girls, more than boys, wished they were in a professional career (nurse, teacher), in a higher school grade, more

TABLE 2

RANK-ORDER CORRELATIONS OF SEX AND GRADE-GROUPS IN FREQUENCIES OF WISH CLASSIFICATIONS, ITEM 1

	Content Categories (*N* = 46)	*General Reference Categories* (*N* = 9)
Male–Female		
Elementary	.49	.86
Junior High	.49	.86
High School	.53	.76
All Grade Groups	.44	.91
Grade Groups		
Male:		
Elementary–Junior High	.76	.49
Junior High–High School	.62	.71
Elementary–High School	.54	.72
Female:		
Elementary–Junior High	.70	.90
Junior High–High School	.75	.88
Elementary–High School	.57	.82
Total:		
Elementary–Junior High	.77	.84
Junior High–High School	.71	.92
Elementary–High School	.54	.85

popular, better looking, shorter or slimmer, and were of the opposite sex. With increasing age, both boys and girls increasingly wished to be out of school, and increasingly wanted to earn money, but were less concerned to be older and bigger when they reached high school. Girls increasingly desired social popularity, social ease and better personality; they were decreasingly interested in a professional career, but, in high school, were more inclined to want jobs as clerks and stenographers. Boys became more concerned with social acceptance, less interested in being of a different species, less interested in an action-daring career and more interested in a professional one. All reported differences were significant at the 5 per cent level or beyond when tested by *chi-square*.

The responses to Item 24, "I wish more than *anything* that . . .," were far more diversified than those for Item 1. 1927 separate wishes were obtained on this item, 876 from 717 boys, 1053 from 835 girls; 149 boys and 105 girls left this item blank, and there was a total of 375 second or third wishes. Sorting yielded a total of 86 content categories, grouped under eleven general reference headings. These, with percentage distributions for boys and girls of all grade groups, are listed in Table 3, in order of total frequency of gross categories for all subjects summed.

TABLE 3

PERCENTAGE DISTRIBUTIONS OF RESPONSES BY GRADE-GROUP AND SEX ON ITEM 24: "I WISH MORE THAN *ANYTHING* THAT . . ."

	Elementary		Junior High		High School		All Grades	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*
Classification N =	248	284	376	419	250	350	876	1053
I. *Personal Achievement*	*15.3*	*8.5*	*24.2*	*14.8*	*30.0*	*24.0*	*23.3*	*16.2*
1. Successful Life	.4	.4	3.2	2.4	10.4	6.7	4.5	3.3
2. Business Career	.4	0	.5	.5	0	0	.3	.2
3. Professional Career	2.4	3.1	2.4	4.5	2.4	3.7	2.4	4.0
4. Art Career	2.4	.7	.5	1.7	.4	1.4	1.0	1.3
5. Farm Career	.4	0	1.1	0	2.4	.9	1.3	.3
6. Home Career	0	0	0	0	0	1.7	0	.6
7. Religious Career	.8	.4	0	.5	.4	.6	.3	.4
8. Action-Daring Career	4.4	1.8	4.0	1.4	.4	0	3.1	1.0
9. Athletic Career	.8	0	2.1	0	1.6	0	1.6	0
10. Miscellaneous Career	.4	.7	1.3	.2	1.6	1.4	1.1	.8
11. Make Money	0	0	.3	0	.4	0	.2	0
12. Clarity of Future	0	0	0	.7	.8	2.3	.2	1.0
13. Success in Sports	2.0	1.1	2.7	.7	1.2	0	2.1	.5
14. Better in Music-Art	0	.3	.5	.5	0	1.4	.2	.8
15. Have Good Job	0	0	3.7	.7	4.0	3.1	2.9	1.3
16. Glamourous Activity	0	0	1.3	.7	2.0	0	1.1	.3
17. Misc. Personal Achiev.	.8	0	.5	.2	2.0	.6	1.0	.3

(*table continued on next page*)

TABLE 3 — *continued*

Classification N=	Elementary *Male* 248	 *Female* 284	Junior High *Male* 376	 *Female* 419	High School *Male* 250	 *Female* 350	All Grades *Male* 876	 *Female* 1053
II. *Personal-Social Relations*	*12.1*	*14.1*	*9.3*	*17.7*	*16.8*	*27.4*	*12.2*	*19.9*
18. More Popular, Liked	1.2	4.6	3.2	5.5	1.2	5.1	2.0	5.1
19. Independent	.4	.7	.3	2.4	1.2	1.4	.6	1.6
20. Withdrawal	.8	0	0	.2	0	.3	.2	.2
21. Love, Courtship	2.4	1.8	.5	3.8	1.6	4.3	1.4	3.4
22. Marriage	1.6	1.4	1.3	1.9	6.0	10.6	2.8	4.7
23. Best Friend	2.0	1.4	.5	0	.8	1.7	1.0	.9
24. Morally Better	2.0	2.1	1.6	1.4	.8	1.4	1.5	1.6
25. Religiously Better	.4	.7	1.6	2.2	2.0	2.0	1.4	1.7
26. Personal Well Being	.8	1.1	.3	.2	1.2	.6	.7	.6
27. Misc. Personal-Social	.4	.3	0	0	2.0	0	.7	.1
III. *Family*	*10.1*	*21.5*	*10.9*	*19.6*	*4.4*	*12.0*	*8.8*	*17.6*
28. Not Broken	2.4	3.9	3.2	2.6	.4	2.3	2.2	2.9
29. More Congenial	0	1.1	.5	1.9	.4	1.4	.3	1.5
30. General Well Being	1.6	1.4	.8	1.7	.4	1.4	.9	1.5
31. Financial Security	.4	.7	.8	1.9	1.6	.6	.9	1.1
32. Have Sibling	.4	6.0	.8	4.8	0	.3	.5	3.6
33. Solicitude Sibling	2.0	2.5	1.3	2.1	0	2.0	1.1	2.2
34. Solicitude Parent	2.8	3.1	2.1	2.9	1.6	3.1	2.2	3.0
35. Reject Family	.4	0	.8	.5	0	.3	.5	.3
36. Family Proud of Me	0	.7	.3	0	0	.3	.1	.3
37. Other Relatives, Misc.	0	2.1	.3	1.2	0	.3	.1	1.1
IV. *Possessions*	*22.6*	*14.4*	*19.7*	*8.6*	*11.6*	*2.3*	*18.2*	*8.1*
38. Motor Vehicle	1.2	.7	9.8	1.0	6.8	.6	6.5	.8
39. Bicycle, Skates	3.6	4.2	.8	.7	0	0	1.4	1.4
40. Animal	6.1	6.0	4.3	2.4	0	.3	3.5	2.7
41. Money	4.4	.7	1.6	1.7	4.0	.6	3.1	1.0
42. Gun	2.0	0	2.1	0	.4	0	1.6	0
43. Clothes	.4	1.1	0	2.4	.4	0	.2	1.2
44. Sports Equipment	1.2	0	0	.2	0	0	.3	.1
45. Musical Instruments	0	.7	.3	.2	0	.6	.1	.5
46. Electronic Equipment	.4	.3	.8	0	0	0	.5	.1
47. Miscellaneous Possessions	3.2	.7	0	0	0	.2	.9	.3
V. *School*	*8.5*	*5.3*	*9.8*	*13.9*	*12.8*	*14.6*	*10.3*	*11.7*
48. Out of School	4.0	2.1	4.0	1.9	1.6	1.4	3.3	1.8
49. Completed	0	0	1.6	2.2	1.6	3.1	1.1	1.9
50. In Higher Grade	0	0	.8	.5	0	.3	.3	.3
51. Go to College	.4	.4	0	2.2	6.4	3.4	1.9	2.1
52. Have Special Training	0	.4	.5	0	.4	2.3	.3	.8
53. Special Achievement	1.2	.7	1.6	1.4	2.4	2.3	1.7	1.5
54. Pass Grade	.8	0	1.1	3.3	.4	.6	.8	1.5
55. Special Activity	.8	.4	0	1.4	0	.3	.2	.8
56. In Different School	.4	.7	.3	0	0	0	.2	.2
57. Miscellaneous School	.8	.7	0	.9	0	.9	.2	.9

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TABLE 3 — *continued*

	Elementary		Junior High		High School		All Grades	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*
Classification N=	248	284	376	419	250	350	876	1053
VI. *Living Situations*	*14.5*	*13.4*	*10.1*	*12.2*	*6.8*	*3.4*	*10.4*	*9.6*
58. Elsewhere, General	.4	.4	0	0	0	.8	.1	.4
59. Live on Farm	4.8	4.2	6.1	2.4	2.0	.3	4.6	2.2
60. Have Better House	4.0	4.2	1.6	4.1	1.2	.8	2.1	3.0
61. Other State or Town	4.4	3.1	1.3	2.9	3.2	.8	2.9	2.3
62. Stay Put	0	0	0	.2	0	0	0	.1
63. At Lake, Resort	0	0	.5	.5	0	0	.2	.2
64. With Relatives	.4	0	0	1.0	0	.3	.1	.5
65. Live at Home	0	0	0	.2	0	0	0	.1
66. Have Own Room	.4	1.1	.3	.7	0	.3	.2	.6
67. Have Play Space	0	.4	0	.2	0	0	0	.2
68. Misc. Living Situation	0	0	.3	0	.4	0	.2	0
VII. *Social Welfare*	*7.7*	*10.2*	*5.1*	*4.1*	*13.2*	*10.9*	*8.3*	*8.0*
69. Peace	6.5	6.0	4.5	3.1	11.2	9.1	7.2	5.9
70. General Welfare	0	2.8	.3	.5	.4	.9	.2	1.2
71. General Morality	.4	.3	0	.2	1.2	.6	.5	.4
72. No Disasters	.4	.7	0	.2	0	0	.1	.3
73. Misc. Social Welfare	.4	.3	.3	0	.4	.3	.3	.2
VIII. *Travel*	*4.0*	*4.9*	*4.3*	*2.9*	*.8*	*1.7*	*3.2*	*3.0*
74. General Travel	2.0	.7	2.1	1.0	.4	.8	1.6	.8
75. Special Trip	1.6	3.9	1.8	1.9	.4	.8	1.4	2.1
76. Miscellaneous Travel	.4	.3	.3	0	0	0	.2	.1
IX. *Physical Appearance*	*1.6*	*1.8*	*1.6*	*3.3*	*0*	*1.7*	*1.1*	*2.4*
77. Stature	.4	0	0	1.2	0	0	.1	.5
78. Looks	.4	1.1	.3	.5	0	.9	.2	.8
79. Health	.8	0	.3	0	0	.6	.3	.2
80. Physical Soundness	0	0	.5	.5	0	0	.2	.2
81. Special Feature	0	.7	.5	1.2	0	.2	.2	.8
X. *General Wish*	*1.2*	*3.5*	*2.9*	*1.4*	*.4*	*.9*	*1.7*	*1.8*
82. Every Wish	.4	.3	1.1	.2	0	0	.6	.2
83. Anything I Want	.4	2.5	1.3	1.2	.4	.9	.8	1.4
84. All Above Wishes	.4	.7	.2	0	0	0	.2	.2
85. Everyone Have Wishes	0	0	.2	0	0	0	.1	0
XI. *Unclassified*	*2.4*	*2.4*	*2.1*	*1.7*	*3.2*	*1.1*	*2.5*	*1.7*
86. Unintelligible, Irrelevant, Flippant	2.4	2.4	2.1	1.7	3.2	1.1	2.5	1.7

It will be noted that the categories of identity and age, present in Item 1, are missing here, and that we have added family, travel and general wish. Personal achievement is still at the top, but the frequency is lower, particularly for boys; personal-social relations are now in second place with a slightly higher frequency; possessions have now become a strong factor, school is in fifth place rather than second, while physical appearance is near the bottom of the list.

As in Item 1, rank-order correlations for subgroups, reported in Table 4, were positive and significant, but distributions in specific categories differed significantly when tested by *chi-square*.

TABLE 4

RANK-ORDER CORRELATIONS OF SEX AND GRADE-GROUPS IN FREQUENCIES OF WISH CLASSIFICATIONS, ITEM 24

	Content Categories ($N = 86$)	*General Reference Categories* ($N = 11$)
Male–Female		
Elementary	.61	.79
Junior High	.54	.75
High School	.57	.86
All Grade Groups	.64	.77
Grade Groups		
Male:		
Elementary–Junior High	.55	.92
Junior High–High School	.59	.69
Elementary–High School	.42	.73
Female:		
Elementary–Junior High	.63	.75
Junior High–High School	.57	.92
Elementary–High School	.41	.62
Total:		
Elementary–Junior High	.62	.82
Junior High–High School	.59	.78
Elementary–High School	.36	.57

In all grade-groups and over-all, girls exceeded boys in wishes relating to family, and, in junior high and high school and over-all, in personal-social wishes. Boys exceeded girls in elementary and junior high and over-all in wishes relating to personal achievement, and, in all grade-groups, in wishes for possessions. Sex differences in these four categories were most marked in the junior high grades. The differences in these categories were, with two exceptions, all beyond the .1 per cent level of confidence. There were no significant sex differences on any other general categories.

Both boys and girls showed, with increasing age, an increase in wishes relating to personal achievement, personal-social relations and school; a decrease in wishes relating to family, possessions, living situation and travel. Interest in social welfare fell off in the junior high group but rose markedly in high school. The magnitude of these changes was in general higher for girls than for boys.

In terms of specific content categories, the responses on the Item "I wish more than *anything* that . . .," were widely dispersed. The most frequent single wish for both boys and girls was the wish for peace, with 6.49 per cent of the total. Boys and girls equally wished for a successful life, a professional career, an animal pet, the welfare of parents, a better house to live in, and an unbroken home, in that order. Boys, more than girls, wanted to have a car, live on a farm, be out of school, have a good job, have an action-daring career, lots of money, and excel in sports. Girls, more than boys, wished for marriage, social acceptance, a boy friend, a sibling, a more congenial family. With increasing age, both boys and girls more frequently wished for a successful life, marriage, to go to college, or to have a good job; and less frequently to live on a farm, have a pet, or have a bicycle or skates. Boys increasingly wished for a car, decreasingly for an action-daring career or miscellaneous possessions; while girls wished increasingly for clarity of the future or special forms of training and decreasingly for a sibling or to live in a better house. In general, more change was noted for both sexes between junior high and high school than between elementary and junior high. All reported differences were at or beyond the 5 per cent level of confidence when tested by *chi-square*.

SUMMARY

In summary, as indicated by both Items 1 and 24, there is a high degree of similarity in the frequency distribution of wishes among general reference categories and somewhat less so among specific content categories for both sexes and all three grade-groups.

There are, however, highly significant sex differences within the general similarity, boys' wishes exceeding those of girls in the direction of personal achievement and self aggrandizement, girls' exceeding boys' in the direction of social and family relations and personal characteristics. These differences are most striking in the seventh and eighth grades, when the girls are predominantly pubescent but the boys are not.

There are also clear developmental differences, with a peak of concern about identity, family, possessions, living situation and travel in the elementary grades; looks, stature, age and mental capacity in junior high; personal-social relations and social welfare in high school. There was some tendency for developmental shifts to be greater for girls than for boys in the population sampled by this study.

The form of statement to which response is made makes a difference in the content of wishes expressed. When the statement is restricted by strong self-reference, as in Item 1, "I wish I were . . .," wishes tend to be more introverted than when the reference is general, as in Item 24, "I wish more than *anything* that . . ." In the former case, wishes for looks, stature, age, identity and smartness are prominent; in the latter, these tend to be absorbed in the more general and less introverted categories of personal achievement and personal-social relations, while general welfare, on the one hand, and material possessions, on the other, become prominent.

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PERCEIVED PARENT ATTITUDES AS DETERMINANTS OF CHILDREN'S EGO STRUCTURE[1]

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The Problem

This study is concerned with the relationship between children's perceptions of acceptance-rejection and intrinsic-extrinsic valuation by parents, on the one hand, and various components of their ego structure on the other. Its principal differences from related studies in this area are (1) in relying on children's perceptions of parent attitudes and behavior rather than on parents' reports or observers' ratings, and (2) in relating these perceptions of parent attitudes and behavior to such characteristics of ego structure as level of ego aspiration, goal frustration tolerance and ideational independence rather than to criteria of personal and social adjustment.

The use of children's perceptions of parent attitudes and behavior as the independent variable, instead of measures based upon actual behavior (or attitudes) of parents as reported by them (e.g., 10, 11, 12) or as rated by observers (e.g., 3, 6, 8), is predicated upon two assumptions. First, although parent behavior is an objective event in the real world, it affects the child's ego development only to the extent and in the form in which he perceives it. Hence, perceived parent behavior is in reality a more direct, relevant and proximate determinant of personality development than the actual stimulus content to which it refers. The relationship between parent behavior and its perceptual equivalent is, of course, an important problem in its own right. But in attempting to identify causal factors influencing personality development, it is less relevant to establish the nature of the actual environment to which the individual is exposed than to ascertain the distinguishing features of his perceived world. Second, it seems reasonable to suppose that children's perceptions of parent behavior and attitudes can be measured more validly than these latter phenomena themselves. In relation to such emotionally loaded issues as acceptance-rejection and intrinsic-extrinsic valuation, both verbal responses by parents to structured or unstructured interview questions and ratings of actual parent behavior

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by observers are inevitably contaminated by the parents' understandably strong motivation to perceive their role behavior in a favorable light and to similarly impress others. Furthermore, the intent of such inquiries can be more effectively disguised from children; and because of their relative inexperience in such matters, the responses of the latter are less likely to be devious representations of actual feelings.

Unfortunately, however, the validity of perceptual measures, i.e., the extent to which verbal reports of perceptual content correspond to actual perceptual content, can never be adequately determined. Correspondence to actual parent attitudes is an unsatisfactory validating criterion since perceptual instruments do not purport to measure parent attitudes but children's perceptions of same. On the other hand, the very same difficulties of validation apply equally well to observers' ratings of parent attitudes and behavior. In neither case are genuinely independent validating criteria available.

THEORETICAL ORIENTATION

The kinds of relationships that are hypothesized as holding between (1) parental acceptance-rejection and intrinsic-extrinsic valuation and (2) children's ego structure are derived from a conception of the role of these parent attitudes in the normative course of personality development and in individual deviations therefrom (1). The initial phase of ego development following the emergence of a functional self-concept may be characterized as omnipotent for two main reasons. First, as a result of their relatively permissive and indulgent handling of the child, parents provide environmental support for his self-perceptions of volitional power and independence; more so than at any other time, they gratify the majority of his legitimate desires and make exceedingly few demands on him. These self-perceptions are further enhanced by the parents' subservience to the child's will in spite of his manifest incompetence and executive dependence on them. Second, because of cognitive immaturity, the infant is unable to appreciate that this volitional subservience on the part of parents is merely a manifestation of altruism out of deference to his helplessness, rather than evidence of obligatory compliance with the magical properties of his will.

However, between the ages of two and three a crisis in ego development arises. Motor, cognitive, and social growth enable the child to become increasingly responsive to parental direction. Thus, as the parents gradually begin to make greater demands on the child, to initiate him into the ways of the culture, and to assume the volitionally ascendant role in the relationship, the environmental supports for the perception of volitional omnipotence and independence become undermined. Concomitantly, as a result of increased cognitive sophistication, the child becomes able to appraise his actual status in the household more realistically, and to appreciate that he is volitionally as well as executively dependent upon his parents.

In the face of these devaluing pressures, ego structure tends to undergo reorganization on a more modest basis. The most tenable and least traumatic solution is for the child to abandon pretensions of omnipotence and to identify with his parents in a volitionally dependent sense. He thus acquires a derived or satellizing status which, by the fiat of acceptance and intrinsic valuation, provides him with a source of adequacy feelings relatively independent of his own competence and performance ability. However, in order to retain this derived status, gain needed approval, and avoid disapproval and guilt feelings, the satellizing child tends to internalize parental values implicitly on the basis of personal loyalty, and to conform to such parental expectations of personality maturation as becoming more responsible, executively independent, and capable of postponing the need for immediate hedonistic gratification.

From the foregoing normative paradigm of ego development, it follows that if parents are either unwilling or unable to extend acceptance and intrinsic valuation, the acquisition of derived status becomes impossible. The child has no alternative but to seek a sense of adequacy in a primary status predicated upon his own performance ability. Since such status constitutes the sole basis of his self-esteem, his ego aspirations for successful performance tend to be compensatorily high, unrealistic, and resistant to lowering; and although infantile aspirations of omnipotence are obviously untenable in terms of current dependent biosocial status, they remain undevalued, nurtured in fantasy, and projected into the future. Having no derived status to preserve, parental values and standards of maturity need not be implicitly assimilated on the basis of personal loyalty, but only insofar as they serve the interests of expediency and self-enhancement.

Hence it was hypothesized that children who perceived themselves as rejected or extrinsically valued by parents would exhibit relatively high levels of ego-aspiration and goal frustration tolerance, would be more likely to nurture notions of omnipotence, would demonstrate more ideational independence from parents, and would conform less to characteristic parental expectations of personality maturation in our culture.

METHOD

Subjects

The subjects in this study were forty fourth and fifth grade children drawn from two elementary schools in Champaign, Illinois. An equal number of subjects was selected from each school, from each of the two grades, and from each sex group. Educationally retarded children and children from "broken homes" and with fathers in military service were excluded from the study. All of the subjects were white and resided in lower-middle and working class neighborhoods. The mean age of the boys was 10.3 years and the mean age of the girls was 10.2 years when the study began.

In each school, data were collected during the course of an after-school arts-and-crafts program meeting ninety minutes twice weekly for a semester. Instruction and materials were furnished free of charge. Participation in the program was voluntary and by consent of parents, but regular attendance was expected. Approximately one-fifth of the subjects' time in the arts-and-crafts class was utilized for the individual and group tests described below. Four of the junior authors administered the tests and another served as arts-and-crafts instructor.

In the case of all instruments, scores deviating more than two standard deviations from the group mean were discarded. Since homogeneity of variance between the two schools prevailed for the overwhelming majority of instruments, the data of all forty subjects were handled for correlational purposes as if derived from a single school population. However, individual means and sigmas were employed for weighting scores and for computing standard scores whenever the *F* test on the variance ratios between the two schools was significant at the five per cent level of confidence or better.

Measuring Instruments for Independent Variables

The following kinds of parent behavior and attitudes were regarded as reflective of rejection: neglect, physical separation, disavowal of responsibility; denial of legitimate needs and wishes of the child; imposition of unjust punishment, criticism or humiliation; lack of patience, consideration and affection; unwillingness to accept inconvenience for the sake of the child, and inability to inspire his confidence. Criteria of extrinsic valuation by the parent included excessive concern with the child's school accomplishment as a vehicle for enhancing his own status; evidence of overmotivating the child and planning for his career in grandiose terms; and excessive public display of his school and other accomplishments.

Three different kinds of instruments for measuring these perceived parent attitudes were tried provisionally in an effort to find one or more with sufficient reliability for research purposes: (*a*) Thematic Materials Test, consisting of 16 selected, individually-administered pictures from the Thematic Apperception Test (9), the Children's Apperception Test (4), the Blacky Pictures (5), the Symonds Adolescent Fantasy Test (13), and the Lydia Jackson Projection Test (7). The pictures (eight for each of the two categories of parent attitudes) were selected on the basis of appropriateness of manifest content for depicting the parent attitudes of acceptance-rejection and intrinsic-extrinsic valuation respectively.[2] Each picture was briefly described by the experimenter and represented as an actually occurring incident or situation. Two alternative interpretations were then presented—one at either extreme of the perceived parent attitude under investigation. The subject was requested to choose the alternative which he thought was most in accord with the actual situation supposedly depicted by the picture. (*b*) Story Completion Test, consisting of 16 brief, purportedly true stories, half of which were illustrative of parental acceptance-rejection and the other half of intrinsic-extrinsic valuation.* As in the Thematic Materials Test, the subject was asked to indicate which one of two interpretive endings he believed to be most congruent with the information already provided. This test was also administered on an individual basis. (*c*) Parent Attitude Rating Scale, consisting of 36 parent attitude and behavior items reflective of acceptance-rejection and intrinsic-extrinsic valuation. The subjects rated each item along a five-point scale of perceived correspondence with own parents' attitudes and behavior. The scale included 18 items for each of the two categories of parent attitudes and yielded a separate score for each. On the basis of ratings made by 25 adult judges on a longer preliminary form of the scale, ambiguous items (i.e., those with high *Q* values) were eliminated from the final form. The items were also selected so as to constitute a relatively normal population of items in terms of extremeness of attitude being measured. Raw scores of subjects on all three instruments were appropriately weighted following item analysis.

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[2] In order to insure that the manifest content of the material was sufficiently ambiguous and unstructured to permit diversity of interpretation, the final form of the test included only items in which satifactory variability of response occurred.

Only the rating scale measures of acceptance-rejection and intrinsic-extrinsic valuation were sufficiently reliable to be used for exploring the relationships investigated by this study. Their respective corrected split-half reliability coefficients were .68 and .81. The comparable coefficients for the thematic and story completion instruments varied from zero to .26.

Measuring Instruments for Dependent Variables

Notions of omnipotence were measured by the Could You Ever Scale.[3] This scale consists of 80 questions (each beginnig with "Could You Ever . . .") tapping perceived ability to perform tasks varying on a continuum from probable to relatively improbable and impossible. It consists of two separate parts—a childhood subscale making reference to the current capacity of the subject, and a projected adult subscale requiring the latter to respond in terms of anticipated capacity in adult life. Separate scales with sex appropriate items were administered individually to male and female subjects. Raw scores on each subscale were weighted on the basis of sigma values of items, converted into standard scores, and combined into composite standard scores for the scale as a whole. This latter procedure was considered justifiable in view of the correlation of .72 between the two subscales. The corrected split-half reliability coefficients were .94 for the boys' scale and .91 for the girls' scale.

Level of ego aspiration was measured by composite goal discrepancy score—the algebraic sum of each subject's goal discrepancy scores (expressed as standard scores) on five different tasks (addition-subtraction, letter cancellation, pegboard, circle-dot, and disassembling of nuts and bolts). For each task, total goal discrepancy scores (level of aspiration for succeeding trial minus performance on preceding trial) were computed on the basis of four trials. A trial was defined as an interval of time, uniform for a given task, during which the subject attempted to complete as many units of work (e.g., addition examples, insertion of pegs) as possible. The split-half reliabilities of the five goal discrepancy scores varied from .65 to .96 with a mean of .87; the intercorrelations among them varied from .44 to .87 with a mean of .65. Because of the relatively high generality of function over trials within a given task as well as among markedly different tasks, it seemed justifiable to use a composite goal discrepancy score and to regard it as reflective of a generalized tendency to maintain a high level of aspiration in relation to the realistic considerations posed by prior performance.

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* See footnote on previous page.

[3] This instrument was conceived by Leonard S. Blackman.

Goal frustration tolerance was measured by composite goal tenacity scores (2). Goal tenacity scores are derived from the same data as are goal discrepancy scores. They are computed by simply subtracting from the latter scores the preceding attainment discrepancies. Since attainment discrepancy (performance on a given trial minus aspiration for same) is reflective of feelings of success or failure associated with past performance, goal tenacity scores relate level of aspiration for subsequent performance to these findings, and, hence, measure the subject's tendency to maintain high levels of aspiration in the face of failure experience. The split-half reliability of the five scores comprising composite goal tenacity varied from .80 to .97 with a mean of .92; the intercorrelations varied from .14 to .71 with a mean of .44 ($p<.01$). In the case of stylus maze performance, uniform and cumulative experiences of failure were experimentally induced for each subject by reporting bogus performance scores which were always a predetermined percentage of previous level of aspiration. The stylus maze goal tenacity scores calculated on this basis had a split-half reliability of .97 and correlated .38 ($p<.05$) with composite goal tenacity scores.

Two measures of ideational independence were employed: (*a*) non-satellizing moral responsibility—the extent to which the subject justified his choice of moral behavior on grounds other than implicit acceptance of the inherent or axiomatic rightness of an underlying ethical precept. The subject was presented with eleven purportedly true situations each dealing with a moral problem confronting a boy or girl of his own age (e.g., cheating, lying, stealing) and was asked to evaluate the moral behavior involved and to indicate the reason(s) for his evaluation. Responses were scored as satellizing if they indicated unquestioning acceptance of a moral principle, and as non-satellizing if reference was made to fear of punishment, expediential considerations, or to abstract concepts of equity and reciprocity. The split-half reliability of these scores was .80. (*b*) Disagreement with perceived parent opinions—the degree of expressed divergence of a subject's opinions from perceived parent opinions on various issues concerned with parent-child relationships (e.g., home chores, discipline, privileges, spending money). The subject first rated 41 such statements on a five-point scale of perceived parental agreement or disagreement with same. One week later he rated these same statements in accordance with his own opinions. The score given each subject on this test was the sum of the discrepancies between own and perceived parent ratings (irrespective of direction of difference) on all 41 items. The split-half reliability of these scores was .67. They correlated .24 ($p<.05$) with non-satellizing moral responsibility.

Ratings by the arts-and-crafts instructor were used to measure two aspects of personality maturity: (*a*) executive independence (subject's disposition to do things by and for himself, without asking for assistance, when competent in a manipulative sense to do so); and (*b*) ability to postpone hedonistic gratification (capacity for deferring gratification of immediate pleasures and satisfactions for the sake of obtaining more substantial but distant rewards). Ratings made at mid-semester and at the end of the semester correlated .88 and .91 respectively for the two traits. Classroom teachers' ratings of executive independence correlated .42 with corresponding ratings by the arts-and-crafts teacher.

Results and Interpretation

Girls perceived themselves as significantly more accepted and intrinsically valued by parents than did boys ($p<.01$ in each case). This finding was hardly surprising in view of established, culturally-determined differences in social sex roles. It is generally expected in our culture that adult males will acquire the major portion of their status on the basis of relative competence and performance ability. Females, on the other hand, can look forward throughout their entire life span to enjoying considerable derived status based solely on dependent personal relationships to others (parents, husband, adult children) who accept and value them for themselves apart from considerations of relative competence and ability. This difference in cultural expectations is almost inevitably reflected in differential parent attitudes toward boys and girls; and according to these data dealing with children's perceptions, such attitudinal differences are apparently communicated quite effectively, long before differential cultural expectations regarding social sex role can be actualized in adult behavior. If confirmed by similar findings in a large variety of sub-cultural settings, this attitudinal factor would undoubtedly constitute a major determinant of the characteristic sex differences in personality development and structure found in our culture.

Perceptions of acceptance and intrinsic valuation were highly related as shown by the correlation of .91 between the two parent attitude rating scales. This finding verified our *a priori* assumption that although accepted children could be either intrinsically valued or valued for ulterior purposes, the attitudes of rejection and intrinsic valuation were of necessity psychologically incompatible. That concomitance of this nature was actually involved in accounting for the above degree of correlation was clearly demonstrated when relationships between subjects' scores on the two rating scales were examined by means of a contingency table.

Findings bearing on the major hypothesis of this study, i.e., that various attributes of ego structure are related in particular ways to children's perceptions of parental acceptance-rejection and intrinsic-extrinsic valuation are summarized in Table 1. With only one exception (disagreement with perceived parent opinions), perceived rejection by parents was not significantly related to any of the ego structure variables. Perceived extrinsic valuation, on the other hand, was related to the majority of the latter variables in the hypothesized direction; in all instances, however, the degree of relationship was only low to moderate. Thus, children who perceived themselves as extrinsically valued tended to manifest more stylus maze goal tenacity and notions of omnipotence, to disagree less with perceived parent opinions, and to be rated as more executively independent and as less able to postpone hedonistic gratification. There were no significant

TABLE 1

CORRELATIONS BETWEEN PERCEIVED PARENT ATTITUDES AND ATTRIBUTES OF EGO STRUCTURE

	Parent Attitude (Perceived) Rating Scale	
Ego Structure Variables	Extrinsic Valuation	Rejection
Notions of Omnipotence		
"Could You Ever?" Boys Scale	* .41	—.07
"Could You Ever?" Girls Scale	* .40	—.01
Level of Ego Aspiration		
Composite Goal Discrepancy Scores	.17	.13
Goal Frustration Tolerance		
Combined Goal Discrepancy Scores	.17	.18
Stylus Maze Goal Tenacity Scores	* .36	.14
Ideational Independence		
Non-Satellizing Moral Responsibility	—.04	.00
Disagreement with Perceived Parent Opinions	* .37	* .33
Personality Maturity		
Executive Independence (Instructor's Ratings)	**—.46	—.20
Executive Independence (Teachers' Ratings)	*—.31	—.14
Ability to Postpone Hedonistic Gratification	**—.53	—.06

* Significant at the 5 per cent level.
** Significant at the 1 per cent level.

differences between self-perceived intrinsically and extrinsically valued children with respect to level of ego aspiration, composite goal tenacity scores, and non-satellizing moral responsibility. Thus, the data provide only partial and limited support for the hypothesis under investigation.

To what extent this obtained modicum of relationship between independent and dependent variables is reflective of actual absence of more substantial relationship, and to what extent it is reflective of inadequacies of measurement is difficult to ascertain. In any event it is evident that problems of measurement in this area are formidable indeed. Completely unstructured projective devices (e.g., the original form of the CAT) are unsatisfactory for this type of investigation for two important reasons: (1) In this and younger age groups (as we discovered from a preliminary try-out), free responses tend to be extremely impoverished, irrelevant, or matter-of-fact descriptions of pictorial material. (2) Projective instruments by design are intended to elicit personality trends at a higher level of generality and extensity than perceptions of specific parent attitudes. However, when structured and given denotative specificity by means of a multiple choice device, thematic instruments were found to be completely lacking in reliability. Of course, in this latter instance, it is very possible that the material was so highly structured that the intent of the measures was overly transparent, thereby eliciting invalid responses. The same criticism obviously applies, to an even greater degree, to the rating scale despite its greater reliability. Thus, the greater subtlety with which perceived intrinsic-extrinsic valuation by parents could be measured probably accounts for the fact that it correlated more significantly with ego structure variables than did perceived acceptance-rejection.

A somewhat different but related issue further complicates the problem of measurement. In addition to the fact that children at a given age level differ among each other with respect to personality structure, they also share certain developmental commonalities that set them apart from other age groups. Thus, ten-year-olds as a group are not only near the normative childhood peak of satellizing orientation, but also (regardless of individual differences in ego devaluation, acceptance of volitional dependence, aspiration level, grandiosity of self-concept, etc.) enjoy an overtly dependent biosocial status in our culture. In the face of these compelling normative commonalities, important but relatively covert individual differences can easily be obscured unless measuring instruments are sufficiently subtle to elicit personality trends transcending phenotypic similarities referable to the age group as a whole.

SUMMARY AND CONCLUSIONS

The perceptions of forty fourth and fifth grade children with respect to acceptance-rejection and intrinsic-extrinsic valuation by parents were investigated by means of structured thematic and story completion materials and by children's ratings of parent attitudes and behavior. Only the last mentioned instrument exhibited adequate generality over items. Perceptions of acceptance and intrinsic valuation were highly correlated. Girls perceived themselves as significantly more accepted and intrinsically valued than did boys.

It was hypothesized that self-perceptions of rejection and extrinsic valuation (in contrast to those of acceptance and intrinsic valuation) would be related to a more omnipotently conceived self-concept, to higher levels of ego aspiration and goal frustration tolerance, to greater ideational independence from parents, and to less advanced levels of personality maturity. This hypothesis was confirmed in part for subjects who perceived themselves as extrinsically valued by parents, but not for those who perceived themselves as rejected. The former group of children tended to conceive of their capacities in more omnipotent terms, showed greater evidence of goal tenacity following cumulative, experimentally induced failure in stylus maze performance, disagreed more with perceived parent opinions, and were rated as less executively independent and as less able to postpone immediate hedonistic gratification. It was suggested that individual differences in the ego structure of subjects may have been partly obscured by the grossness and transparency of the measures used and by normative communalities referable to the overtly dependent biosocial status of all ten-year-olds.

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THE OVERT FEARS OF DAKOTA INDIAN CHILDREN[1]

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The methods of child-training characteristic of the Dakota Indians are in the main mild and permissive, and consciously opposed to physical punishment which, they feel, is abused by white parents. However, to correct seriously unacceptable conduct they have their own severity: fear. Disobedient children are first told in detail about a terrible being who will appear if misbehavior does not cease. If this warning is not sufficiently impressive, a member of the family, disguised and dressed for the part, looms out of the dusk and chases the screaming little sinners. From eastern Santee to western Teton, bogies vary locally in number, sex, and type, but universally have a form or costume unlike people the children ordinarily see (3, pp. 127-128; 6, p. 27).

In 1951 and 1952, as part of a study of the changing role of women among Santee Dakota now living on the Oak River Reserve near Griswold, Manitoba,[2] I made systematic inquiry about the socialization process that had formed them and the extent to which they were continuing the same method in training their own children.[3] Although several old women and all the younger mothers said that the old ways of acting out the bogy had dwindled to descriptions and warnings, it seemed to me wise if possible to check these statements with the acutely interested parties. Often a child

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[1] Field work among the Canadian Dakota in 1952 and among the Minnesota Dakota in 1953 was financed by a grant from the Wenner-Gren Foundation for Anthropological Research. For assistance in formulating the problem and in reading and criticism of this paper, great thanks are offered to Dr. Kathleen M. Darley and to Professor Dale B. Harris, Institute of Child Welfare, University of Minnesota. The sympathetic cooperation of two teachers, Mrs. Alice Spence at Oak River Reserve, Griswold, Manitoba and Mr. Virgil Wurr at Morton, Minnesota, made the study possible.

[2] Canadian Dakota are descendents of Minnesota bands who fled across the border immediately after the Sioux Uprising of 1862. The Oak River Reserve was established in 1875.

[3] In addition to free interviews and participant observation, I followed and adapted the *Ethnological Field Guide for Study of the Child* developed by Sister M. Inez Hilger, OSB; in 1952 I also used the *Socialization Interview*, prepared by the staff of the Laboratory of Human Relations, Graduate School of Education, Harvard University. I am greatly indebted to Sister Inez and to Dr. John W. M. Whiting for access to these manuscript materials.

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informant will readily disclose how alive are beliefs and customs which, according to self-conscious and defensive elders, have disappeared, but at Griswold, the prospect of finding a youngster who spontaneously or with mild inducement would talk to me, was slight. Therefore, in an attempt to see if anything could be picked up about the continuance and effectiveness of old types of training or of other items of culture content, I used the crude method of asking the children to write about their fears during a regular session of the day school.

Procedure

The 21 children who took part in the exercises were from 8 to 14 years of age. I was not present when the teacher asked them to write about "the thing that frightened me most when I was a little child." She and I had agreed that if the children were told they need not put their names on the paper, we would thereby remove the blocks to free expression raised by self-consciousness and the suggestion of cowardice. However, ten children wrote their names and two others later identified their contributions. The children responded in the main by describing a single experience in from 50 to 60 words, often vivid and full of action. Only one child gave a list; this contained five items.

Considered alone, the results of studying so small a group would have little interest beyond the purpose of checking against the parents' statements. However, the kind of fears set down at the Oak River Day School when compared with the well-known findings of Hagman (1), Jersild and Holmes (2), and Pratt (4), can be seen in relation to general childish fears and to those characteristic of rural neighborhoods. For those elements which seem peculiarly Dakota, a comparative series was secured in 1953 from a rural school at Morton, Minnesota, attended exclusively by Dakota children living at the Lower Sioux Community. These Minnesota Dakota are much mixed with white and are predominantly white in culture. Here, 18 children from 6 to 14 years of age completed the sentence read to them by the teacher: "What scared me most when I was little, was ...." Names were again omitted but ages were written in each case. The longest response was 30 words. Only two children mentioned more than one fear.

Results

The fears named by the two groups of Dakota children were first analyzed according to four main classes established by Jersild and Holmes (2) and, following their method, percentages were computed for number of fears in each category rather than for the number of children expressing them (Table 1). Within these categories fall 90 per cent of fears expressed by the Canadian Dakota and 82 per cent of those of the Minnesota Dakota.

TABLE 1

FEARS EXPRESSED BY DAKOTA INDIAN CHILDREN COMPARED WITH OTHER FINDINGS

	CATEGORY			
	I	II[†]	III[‡]	IV
Subjects	*Animals*	*Strange Persons*	*Accidents, Pain*	*Strange Objects and Situations*
	PERCENTAGE OF FEARS IN EACH CATEGORY			
Dakota, Manitoba Age: 8–14 $N = 21$[*]	45	27.6	10.0	7.2
Dakota, Minnesota Age: 6–14 $N = 18$	50	14.3	9.0	9.0
Jersild I[§] Age: 4–6	17.3	3.9	13.4	3.9
Jersild II[§] Age: 11–12 $N = 398$	13.5	1.4	6.7	0.5
Jersild III[§] Young adults	18.8	3.2	10.4	1.3
Pratt[‖] Age: 4–16 $N = 570$	67.0	....	....	...
Hagman[¶] Age: 2–6 $N = 70$	36.9	....	....	...

[*] N = number of children.

[†] Category II: Strange; queer or deformed; masked.

[‡] Category III: Falling, doctors, pain, accident.

[§] For sources, see Jersild and Holmes (2). Jersild I, mainly urban, observations by mothers. Jersild II, urban, interviews with school children. Jersild III, recollections written by adults, mainly college students.

[‖] Pratt (4), rural school children.

[¶] Hagman (1), small town, interviews with mothers.

Fears of Animals

In all the studies, by whatever method obtained, animals cause the greatest number of conscious childhood fears. For the Manitoba Dakota, the percentage of such fears is 45 and they are found in 52 per cent of the children; at the Minnesota community the percentage of animal fears and that of children expressing them are both 50. These figures are higher than for groups of urban children, but noticeably smaller than for rural children in Michigan (4).

More interesting is the kind of animals involved. At Oak River, Manitoba, large domestic animals and poultry account for eight of thirteen such fears, snakes for the rest. At Morton, Minnesota, ten fears of domestic animals include one dog. The Manitoba Indian children do not name dogs, although practically every household has at least one. Snake and frog were mentioned by one Minnesota Dakota. Both groups of Dakota are rural and stock-owning. Therefore, to quote the ubiquitous trap for the unscientific, "It seems reasonable that . . . ." But the 570 Michigan farm children studied by Pratt came up with these first-ranking fears: bears and snakes, and following close behind dogs and bulls, came lions, tigers and elephants. Only one pseudo-exotic animal appeared among the Dakota accounts—a snake "big as a stove pipe"—and even this was actually seen at the Brandon Fair.

Canadian Dakota children present their fearful animals in action. Four children told of being chased by a bull—each in a dream. The following is typical:

> I dream about a bull chasing me and I can't move my leg and can't call for help. And when the bull is giving bump, I woke up and rub my eye, but they was no bull. I tolded my mother that I dream about a bull. I was afraid next night.

To be shocked motionless—a common feature in anyone's dreams—is among the Dakota also frequently mentioned in waking life.

Accidents, Falls, Pain

A few Dakota children named a fall or a medical experience as a major cause of fear. One Canadian boy of 14 described a fall from a tree; a second "nearly fell off a horse"; a third mentioned the doctor's long needle. One Minnesota eight-year-old had fallen through a barn roof and another "fell in to the water and seen fish."

Strange Situations

All of the strange situations which frightened Dakota children occurred off the reserves and could be expected to turn up on any child's list: Griswold, Maintoba: the circus; planes at a airport. Morton, Minnesota: a show; a 3-D movie.

Strange People

In this category Jersild and Holmes put several kinds of unfamiliar human figures to which children attributed strong fear: strangers, people of queer or deformed appearance, masked persons. When reasons for fears are sorted according to this classfication (Table 1), we find a contrast between Dakota and other children so marked as to suggest that at least some of the items in the category have different meanings for Indians than for whites. In the small group of 18 Dakota children in Minnesota, three (17 per cent) described fear rising from strange persons that fall in the three types of Jersild: a bum that came to my house; a known person dressed up like a bum; "my Dad looked through the window with a ghost mask." Drunken white men are dreaded in the Lower Sioux Community which, until very recently, was federal land and outside the sheriff's authority. Ghosts, judging by the old men's talk, are more frequent and less welcome visitors.

It is among the Canadian Dakota, however, that we see the greatest incidence of conscious fears of persons. Eight children (38 per cent, equal in number and ratio to those who said they most feared domestic animals) described terrors caused by strange or uncanny human figures. Seven actually saw these horrors; one was met in a dream. A nine-year-old girl tells with emotion about being followed by a strange man who came out of a gravel pit; her brother, age eleven, lists among five fears "a man with big eyes"; another boy of eleven tells at length about a pursuing ghost at a scout camp who turned out to be a teasing comrade with a "blankit over himsilf." The other five figures are now probably known to each narrator to have been human (two said so); but, at the time they appeared, they represented something supernatural to the child. One was Santa Claus at a church party; the other four were the bogy.

The supernatural socializer among Manitoba Dakota is *Waḳanḳa-da*, the Old Woman who carries off bad children in her sack. Parents and grandparents describe her as a terrible figure with a white face, a big hump on her back, and a stick in her hand who will appear at dusk to the child who transgresses the social rules. If misconduct continues, a member of the family steals out of the house and hides bulky old clothes in bushes. At nightfall children playing in some forbidden manner outside the house will suddenly see advancing toward them the actual figure already imagined in horror, and will run home screaming. Children who persistently refuse to go to bed will hear a stick knocking at the door and the Old Woman will enter. The child at the time is unaware that the part is played by an older brother or by the grandmother who is his most trusted and tender support.

Reasons for the dramatized bogy are as often protective as punitive. A woman who in 1900 was frightened by the Old Woman when dangerously swimming at night with a group of small cousins played the part in 1951 to a grandson aged three for the double purpose of preventing him from running to the highway at night and of driving home the neighbors' small fry. Digging up vegetables in the gardens or persistent crying for little cause also brought forth *Waḳanḳa-da*. In milder form she appeared as a figure woven from grasses beside a dangerous creek; or children were warned away from a well by hearing that the Old Woman lived at the bottom. To these motives, good in theory if disturbing in practice, there is sometimes added a clearly sadistic element. It is fun for the older brother or sister to scare the kids, and to certain adults there was also an element of pleasure. One old woman at Griswold, Manitoba, who for thirty years

Dated
Accs. No........

has been known as "great for it," told me, "I never scare children at night; it will make them sick." For today general lip-service and many enlightened parents are not in favor of the Old Woman, at least in material form. One elderly Dakota woman recalled her own childhood fright so fully that on at least one occasion as an adult, when she saw the Old Woman advancing in the dusk, she screamed and ran. Another, now 67, came home at night to find her first two children who had previously been chased by the bogy sitting out in the middle of a field, in terror of what might come out of the trees thick around their house; thereafter, the practice ended in that family. "We did it," she said, "because it was done to us and we knew how well it worked."

However, two women, one 70 and the other 50, described their recent dramatic performances, and young mothers in the course of the Socialization Interview, made frequent mention of warnings about the Old Woman which, they said, were no longer reinforced by materializations at dusk. Some mothers said they warned the children, others that grandparents did so; between four and six years was considered the right age to tell about the bogy. Two women of thirty said they had forbidden grandmothers to continue "haunting" after the two eldest children in each family had been made nervous and ill.

Here is what the children, translating *Wakanka-da* as "witch," wrote on the subject:

> I dreamed about a witch chasing me and I couldn't run, so I got frightened and tried to call my mother but all I could say was a noise. So when she was nearly catching me I woke up. (A boy, aged 9, whose mother had stated that all talk of the Old Woman had ended with her sons, aged 18 and 17.)
>
> My brother had an old hat and coat. The coat was all black and white and the hat was white, too. Then he wore all the clothes and run into the bushes. Suddenly I saw him coming from the bushes. He ran and chased me home, and he went back again. I got scared and grabbed my mother. (Boy, aged 12)
>
> In spring we were playing in mud in the field. All at once we saw something was coming. It came near and it was a witch. I turned but I could not move my feet because they were stuck to the mud. At last they were free and I ran home. I got home in time.
>
> When my mother and father are not looking I always go to the garden to steal carrots. When I was going to steal some carrots an old witch appeared from the bush, and stood beside the garden, but it was my brother.

These are examples of the overt fear inspired by the Old Woman. How much has been buried and transferred I do not know. Child training by bogies is, as mentioned earlier, a widespread Dakota trait. Minnesota Dakota at Morton know about it, but no woman interviewed had met it in dramatic form in her own childhood. The oldest, 88 years of age, had been warned and knew that formerly people acted out such things, but she was told "more about the devil and that if she was bad, she wouldn't go to heaven," which could account for the now prevalent fear of ghosts, often equated with the devil. A younger woman of 52 had been threatened by a great-grandmother with the materialization of *Wakanka-da* but the nearest she had ever been to a real performance was when her great-grandmother would suddenly throw her shawl over her head to scare the children —"it worked."

That parents other than Dakota Indians make use of the child's fear of bogies and exotic beasts is evinced from the inclusion of the following paragraph in a book published in 1952: "The trend with perceptual growth toward fear of imagined dangers is probably accelerated in some children by parental threats for childish misdemeanors. 'The bogeyman will get you!' 'A big tiger will come and eat you if you don't behave,' and similar parental threats would seem to reduce substantially the child's feeling of security" (5, p. 308).[4] But few societies have more thoroughly institutionalized the practice than have the Dakota. As many of them say "it worked," and, one might add, it worked because it had everything, or rather it contained the possibility of arousing multiple types of fear. In Table 1 under the heading, *Strange Persons,* the proportion of such fears reported from the three Jersild series is low. But to what other categories of fear could the twilight appearance of this horrible punitive figure be assigned? From Jersild's fuller list four others are obvious: persons the child has been warned against; darkness and imaginary creatures; imaginary creatures without mention of darkness; guilt and fear of punishment. Percentages for expressed fears of imaginary creatures associated with darkness run thus for the three Jersild series: Children age 4–6, 12.6; age 11–12, 13.0; young adults recalling childhood, 12.9. As an agency of socialization, the Old Woman could not fail to be a powerful producer of habits which would tend strongly to prevent transgression of what the Dakota considered basic cultural rules.[5]

Other Fears

The ten per cent of fears set down by Canadian Dakota children which are not included in Table 1 are only three: an account of being chased by a ghost, and two "old Indian" stories told by mother and grandmother, one featuring an enormous snake which attacked a horse, and the other a woman who put her leg on a little boy and "it grew bigger and bigger." Among Minnesota Dakota, one child most feared darkness, and another mentioned being knocked down and buried alive; three named ghosts.

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[4] A Canadian Dakota mother told me, "Marjorie is afraid of tigers. She saw one at the Brandon Fair. Now when she is bad, we say, 'The Big Cat will come!' "

[5] See Whiting and Child (7) on the origin of guilt.

The fear of supernatural beings encountered among these two groups of rural Indian children can be compared with that found by Jersild and Holmes in a public and a private school in New York City (2, pp. 156-157). The percentage distribution is: Canadian Dakota (Old Woman and Ghost), 17; Minnesota Dakota, 14; New York Public School in a low economic district, 12.8; New York private school, 5.8; the two schools combined, I.Q., 80–100, 12.4; I.Q., 120 and above, 5.6. These and all major classes of fears, it is emphasized, are common to all levels of intelligence.

CONCLUSION

Overt fears of Dakota children fall within the usual categories. From their written expressions it is possible to identify the Indian child with rural white children of the United States and at the same time to recognize types of fear which, though they occur in all groups, here carry a significance characteristic of Dakota culture, particularly with regard to methods of child training. As to covert fear and the role of Dakota training in its production, having no competence in Freudian or behavioral psychology I do not know, and possessing more humility than intuition, I shall not guess.

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THE DEVELOPMENT OF CONCEPTIONS OF RULES IN CHILDREN

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It is well known that children's initial conceptions of moral rules are rather specific and linked with action and that eventually these become more general, abstract, and extensive. Most investigations of moral development confine themselves to describing the age-by-age progression, but there is some question as to how to account for the general growth trend. There is, for instance, Piaget's (12) explanation in terms of a shift from coercive to cooperative social relationships; and there are explanations stemming from learning theory (6) stating, for instance, that notions deriving from direct experiences in specific learning situations later are generalized to other situations. In addition, literature bearing on conceptual development (1, 17), on levels of thought (14, 16, 19), on saltatory development versus gradual development (20), and on role playing (5) is quite relevant to the general question of how awareness of rules develops.

This paper will report a study of the dawning of awareness of some rules governing transactions having to do with purchasing and will discuss the bearing that this material has both upon the development of moral rules in general and upon the theories currently accounting for this development.

METHOD

In papers published earlier (14, 15), a study of the development of monetary concepts in children was reported in considerable detail. The fathers of the children either owned small businesses or worked at white collar jobs in Bloomington, Indiana. Sixty-six children were interviewed: five boys and five girls at each age (4½ to 11½ years), except at the lowest age where three of each sex were interviewed. A schedule of seventy-one questions was administered in four sittings, each lasting between fifteen and thirty minutes. The entire interview was completed within a month. School rooms with which the subjects were familiar were used for interviewing.

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Items were scored by arbitrary weighting.[1] Each child's responses to every item were scored, and children were arrayed in rank order by total score. Scale analysis, of the variety developed by Guttman,[2] was applied. Scale analysis distinguished nine scale types, indicated which responses went together to form each scale type, and showed the particular response or responses which differentiated any given scale type from those preceding it. As pointed out, these scale types are equivalent to "stages of development." One of the advantages of ordering data around scale types, rather than in terms of average age of subjects, is that one has an assurance that the response patterns of all children at any given stage are highly homogeneous.

The stages reported previously had to do with the child's conceptualizations of money and of relations existing between and among customers, storekeepers, storekeepers' helpers, manufacturers and manufacturers' helpers. Among the children's responses were some that pertained specifically to rules: i.e., canons regulating acts that should or should not be done with regard to handling money and with regard to persons involved in buying-selling transactions. Our analysis of the development of children's conceptions of rules will rest upon an examination of twenty-three responses.

ANALYSIS OF RESPONSES

Analysis of the data will fall into two parts. First, the responses will be analyzed separately. Then the responses will be grouped into larger classifications and "stages in rule development" will be elaborated.

Several children below the lowest age of our subjects (4½ years) were observed during the investigation. These very young children have no monetary rules, but engage in behavior which sets the background out of which rules eventually emerge. Thus the child may pile money or push coins around. This he has probably learned to do not through observing others handle money, but by way of fitting these objects, like other objects, into ongoing action-schemes of pushing, piling, and the like. A more "social" kind of act is that of a two-year-old who places coins in his pockets in imitation of his father. Somewhat later, children count coins: partly in imitation of the others who count coins, partly as a part of counting objects in general. These young children may also play store, feeling in a general and rather vague way that money should be present during the game, but having no clear notion of the function of money. Children may also reach the point of knowing that money buys, or only pennies buy, but not comprehend that the transaction cannot proceed without money or pennies. From this background of gradual development emerge the first genuine conceptions of rules—however deficient such notions may seem to the adult.

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[1] This procedure is adequate if the purpose is to determine scalability. Correlation between two independent scorings was .99. Each section of the schedule was given twice to ten children from all age levels except the youngest and the oldest. There was a 2 per cent difference between test and retest responses. On only two items was there as much as 8 per cent change.

[2] Prediction error (second approximation) was 6 per cent. The ordinary criterion is 10 per cent or less error.

Scale Type 1 (Number of subjects, 7; median age, 5-4; age range 4-8 to 5-11)

Rule (a). YOU NEED MONEY TO BUY WITH, YOU CAN'T JUST TAKE GOODS WITHOUT PAYING. REASON: YOU JUST CAN'T; OR IF YOU DON'T PAY YOU'LL BE PUT IN JAIL—BUT NO REASON IS GIVEN WHY EXCEPT THAT YOU WILL.

This is a definitional rule: that is, one pays for goods for no other reason than that he must—by definition. If a consequence is envisaged, it follows also by definition, by a kind of direct connection between infraction and consequence that is grounded in no other rationale than its own connection. In the exchange of goods and coins there is also involved a directly apprehended equivalence; the child can virtually "see" the equivalence of coins paid and goods received.

Rule (b). ANY COINS BUY ANY GOODS; AND CUSTOMER GETS COINS IN RETURN FROM STOREKEEPER WHO MUST GIVE THEM OR DOES SO BECAUSE HE WANTS TO.

This rule exists by definition also and illustrates the above-mentioned general equivalence of goods and coins. Moreover the storekeeper's associated act of returning coins is governed definitionally or by his own personal whim; there is again direct equivalence of coins returned for coins paid.

Rule (c). CERTAIN AMOUNTS OF COINS ARE GIVEN FOR CERTAIN NUMBERS OF OBJECTS: FOUR FOR FOUR, ETC. CERTAIN SIZES OF COINS ARE PAID FOR CERTAIN SIZES OF OBJECTS: QUARTER FOR LARGEST OBJECT, DIME FOR SMALL, ETC. CERTAIN NUMBERS OF COINS ARE PAID BACK FOR CERTAIN NUMBERS OF COINS PAID BY CUSTOMER: TWO FOR TWO, ETC. CERTAIN NUMBERS OF COINS ARE PAID BACK FOR NUMBERS OF OBJECTS BOUGHT: TWO COINS FOR TWO OBJECTS, ETC.

The children invent these rules. The equivalence of coin for coin and coin for object is, again, in direct perceptual terms: i.e., size or number. Adherence to these rules is quite fluid; for, although the child utilizes them in play, the adult may violate them or ignore them, usually without arousing protest.

Scale Type 2 (Number of subjects, 5; median age, 6-5; age range, 6-0 to 6-11)

Rule (a). EXACT CORRESPONDENCE EXISTS BETWEEN THE "VALUE" OF COIN PAID AND AMOUNT OF GOODS IT CAN BUY.

THUS A NICKEL BUYS A FIVE CENT CANDY, BUT IT CANNOT BUY A THREE CENT CANDY, FOR ONE NEEDS THREE PENNIES TO BUY A THREE CENT CANDY.

Although this is still a definitional rule—a coin of given value buys only objects of same value—it represents an advance on the more rudimentary rules of Scale Type 1. Formerly size was matched with size and number with number. Now "cents" is matched with "cents," for the child knows that a nickel is worth five cents and is told that the object is worth five cents and so they are worth the same. The child is thereby moving away from direct perceptual comparisons, as in size against size. Another way of stating this is that the balancing of goods against money is now a balancing of things that look less homogeneous to direct perception.

Scale Type 3 (Number of subjects, 5; median age, 6-3; age range, 5-9 to 7-2)

Rule (a). COINS OF GIVEN VALUE CANNOT PURCHASE OBJECTS OF MORE VALUE BECAUSE THEY AREN'T "ENOUGH." (THEY CAN NOW PURCHASE LESS). HOWEVER THE CHILD HAS NO KNOWLEDGE OF HOW MUCH MORE IS NEEDED TO PURCHASE THE OBJECT. THUS A NICKEL CANNOT BUY A SEVEN CENT CANDY, BUT IF A NICKEL IS ADDED THAT WOULD BE ENOUGH BECAUSE IT'S TEN CENTS THEN.

The child is getting away from definitional rules. He knows that seven is more than five (or "comes after" five) and that ten is "more than" seven—though he may not be able to figure out how much more. His rules of "can buy if have more, can't if less" involves much more than the direct perception of Scale Type 1 and the initial direct balancing of "same worths" of Scale Type 2. He is now engaged in manipulating the relations of "more worth" and "less worth," though his operations with these concepts are, from the adult's standpoint, exceedingly deficient.

Rule (b). THE AMOUNT OF CHANGE RETURNED BY THE STOREKEEPER DEPENDS IN SOME SENSE ON THE AMOUNT PAID BY THE CUSTOMER, BUT THE MECHANICS ARE NOT UNDERSTOOD. THUS: "GIVE HIM A DIME AND YOU GET A NICKEL BACK; GIVE A NICKEL AND YOU DON'T," OR "MAYBE HE GIVES THE SAME WORTH AS THEY GAVE HIM."

The grownup's act of returning coins is governed no longer by absolutistic rules or by personal whim, but by some sort of balancing of relations of "worth" between what customer gave and what should therefore be given back. The relationships that are apprehended are no more specific than this rough balancing, for the child willingly receives any amount of change—whether more or less than he himself paid out. The role of the price of goods in the equation is not at all perceived.

Rule (c). THE STOREKEEPER'S HELPERS GET PAID FOR HELPING, IN PART BY THE CUSTOMER WHO GIVES THEM MONEY, AND IN PART BY THE STOREKEEPER.

The payment of helper for services is more than definitional, since it is only fair for him to get paid for working. The child of course directly perceives the helper helping. However, since the payment for services is invisible and since the child actually sees the customer paying money to the helper, these two acts of supposed payment are confused, and so fused into one. But the rule covering work is unambiguous enough: work is paid for with money. The equivalence of "worths" (work and money) is now more heterogeneous than were previous equivalences that involved only goods and money, or money and money.

Scale Type 4 (Number of subjects, 4; median age, 6-5; age range, 6-0 to 6-11)

Rule (a). THE CUSTOMER MUST PAY FOR GOODS, OTHERWISE THE STOREKEEPER WOULD LOSE, OR BECAUSE IT COSTS THE STOREKEEPER. BUT THE CHILDREN DO NOT UNDERSTAND WHAT "LOSE" OR "COST" MEANS.

This rule rests upon definitional consequences that accrue to others rather than to self. The nature of the consequence is not clearly comprehended, but there is the notion that something occurs that is bad for the storekeeper if one does not pay him. This consequence follows "just because it does."

Rule (b). THE CUSTOMER DOES NOT PAY THE STOREKEEPER'S HELPER. ONLY THE STOREKEEPER PAYS HIM, AND FROM THE CUSTOMER'S MONEY.

Although the fine points of this payment are not under consideration, are not indeed even dreamed of, the child now understands that only the storekeeper really gets paid for goods. The fact that the customer's payment is for goods alone is aligned finally with the fact that the helper helps the storekeeper; hence his helping of customers is not really helping in the same sense as "working for the storekeeper." Hence the storekeeper has an obligation to follow the rule that work gets paid for. The direct perception that customers "pay" helpers is thus disregarded or discounted. This discounting was, in a much less complex way, what the child did earlier when he no longer used large coins to buy large objects but took into account that a large object might be worth very little, and so on.

Scale Type 5 (Number of subjects, 6; median age, 7-10; age range, 6-10 to 8-9)

Rule (a). RELATIONS OF ALL COINS ARE UNDERSTOOD.

The child now understands in quite a systematic fashion the relations of all coins (numbers) to one another. He not only understands the fine points of "more" and "less," but understands precisely why and how they are related.

Rule (b). CHANGEMAKING IS UNDERSTOOD AND DONE CORRECTLY.

This is merely the manipulation of the systematic consequences of relations between coins or "worths." For each transaction between purchaser and salesman there are specific consequences that can be worked out according to a flexible system of arithmetic rules.

Rule (c). THE MANUFACTURER PAYS HIS WORKERS FOR THEIR SERVICES AND PAYS FOR HIS MATERIALS (OUT OF MONEY RECEIVED FROM STOREKEEPERS) RATHER THAN JUST KEEPING THE MONEY ALL FOR HIMSELF.

This is the same as Rule (*b*), Scale Type 4, except that the relation between manufacturer and worker is more invisible than that existing between storekeeper and worker. The rule of payment for work is not extended to the manufacurer, obligation being conceived now as the same as the storekeeper's. In other words, the manufacturer and storekeeper roles instead of being conceived of as different are, for this set of activities, conceived of as identical.

Scale Type 6 (Number of subjects, 5; median age 8-7; age range, 7-5 to 9-8)

Rule (a). IT MAKES NO DIFFERENCE WHO GIVES FIRST—THE CUSTOMER HIS PAYMENT OR THE STOREKEEPER HIS GOODS AND CHANGE—BECAUSE IT AMOUNTS TO THE SAME THING ANYHOW.

In the preceding scale type, although the child understood the systematic relations and consequences of arithmetic, he was unable to apply his knowledge to this particular situation. Again, on a more complex level, he is now able to discount the evidence of his eyes through a rather elaborate manipulation of symbols.

Rule (b). CREDIT IS ALLOWABLE BUT SHARP LIMITATIONS ARE PLACED UPON ITS GRANTING. THE STOREKEEPER WILL DO IT ONLY UNTIL THE NEXT DAY, FOR AN HOUR, OR IF IT'S A FRIEND, ETC.

However, from the limitations placed upon credit, we can see that the child still does not apply his new-found knowledge of the systematic logical relations existing among numerical values to every "it doesn't matter who pays first" situation. What may be termed "the temporal" interfered with "the logical." The child does not discern that it really does not matter whether payment is made before goods are received or after, providing agreement is made that payment will be made at some determinable time. It is nevertheless significant that credit-with-limitations is conceded by the child simultaneously with his recognition of Rule 6 (*a*) discussed directly above.

Rule (c). THE OWNER OF THE STORE GETS PAID BY A SUBTRACTIVE PROCESS. HE TAKES WHAT IS LEFT FROM CUSTOMERS' MONEY AFTER PAYING FOR GOODS AND SERVICES.

Previously it was understood that the owner received payments for his goods, also that he paid his helpers, also that he paid for materials. These now are all seen to be related. Also the systematic coordinates of arithmetic are now applied in a more general sense than previously. In Scale Type 5 he was balancing the heterogenous weights of money paid against goods and money returned. Now he is balancing the relation of "money for self" over against "money for materials and money for services."

Scale Type 7 (Number of subjects, 17; median age, 8-9; age range, 6-8 to 10-6)

Rule (a). THE OWNER OF THE STORE GETS PAID BY PROPORTIONATE SUBTRACTION. THUS HE AND THE HELPER MAY SPLIT THE MONEY IN HALF, OR THE OWNER MAY GET MORE BECAUSE HE IS THE OWNER.

This rule suggests that although the child is systematically organizing value according to more precise arithmetic coordinates than in the rule just above, his operations are still colored with what to an adult would be unwarranted "moral" considerations.

Rule (b). THE STOREKEEPER IS ALLOWED TO SELL GOODS FOR MORE THAN HE ORIGINALLY PAID THE FACTORYOWNER BUT IT'S REALLY NOT FAIR FOR HIM TO DO SO, ALTHOUGH IT IS DONE. THE CHILD DOES NOT KNOW THE REASON WHY.

Inappropriate moral considerations enter into this rule also. The child understands that the storekeeper is motivated by desires to make money. He understands also that according to the rules of arithmetic, goods worth so much are worth only that much—not more. Hence to sell them for more is "not fair." Yet he knows, because he has been told, that it is done sometimes. Hence, the child is experiencing conflict between or among his conceptions.

Rule (c). THE FACTORYOWNER DOES NOT SELL DIRECTLY TO THE CUSTOMER BECAUSE IT'S TOO GREAT A DISTANCE FROM FACTORY TO CUSTOMER.

The reasons why the factoryowner does not sell directly to customers were previously definitional (he just doesn't; he mustn't; only the storekeeper can because he's the storekeeper). The current rationale for the rule, though by adult standards inadequate, is an advance, for now there is a reasoned statement of consequences.

Rule (d). THE STOREKEEPER DOESN'T EVER *NOT* GIVE BACK LESS CHANGE THAN HE SHOULD TO CUSTOMER'S, BECAUSE THAT'S WRONG, OR BECAUSE THEN THE CUSTOMERS WOULDN'T RETURN.

Previously there was a flat denial that such shortchanging could occur. By definition, either it could not, or, on moral grounds, it could not. Now its possibility is denied: either on grounds of reasoned, calculated, consequences, or on grounds that because of his ethical sentiments the storekeeper would not, although he conceivably could, cheat his customers.

Scale Type 8 (Number of subjects, 6; median age, 9-9; age range, 8-4 to 11-0)

Rules (a), (b), and (c). PROFIT, PAYMENT OF OWNER AND WORKER, AND GRANTING OF CREDIT ARE NOW UNDERSTOOD.

At last the systematic relations and consequences of value are symbolically and impersonally manipulated, regardless of ethical and personal considerations.

Rule (d). UNDERSTANDING OF WHY THE MANUFACTURER DOES NOT SELL DIRECTLY TO CUSTOMER IN TERMS OF THE LOGIC OF THE DISTRIBUTION SYSTEM.

There is also, finally, a systematic coordination of groups of persons or rules according to conventionalized agreements and monetary understandings.

Scale Type 9 (Number of subjects, 11; median age, 11-2; age range, 9-7 to 11-6)

Rule (a). THE STOREKEEPER MAY SOMETIMES CHEAT HIS CUSTOMERS IN GIVING CHANGE, BECAUSE HE WISHES TO GET RICH.

Despite the systematic relations of money and the systematic, impersonal rules which govern profitmaker, personal (immoral) motives may prevail. But these latter motives prevail because of a reasoned calculation of consequences of what might happen if one is caught.

Stages of Rule Development

The children's responses now lend themselves readily to being grouped into more general developmental stages. (The ages for any given stage presumably will vary with different populations.)

Prior to Rules: Direct Action and Imitation (below 4 years, 6 months)

The handling of money either is connected with buying and selling, or is connected only in the vaguest sense. The child handles money just as he does certain other objects, by pushing and piling it. Or he imitates others' handling of it, putting it in his pockets, counting it. Or he knows in a vague way that it has to do with getting things at the store, but it not aware of its function in buying. This stage is analogous to Piaget's description of individual rituals and regularities of behavior, as when the child bounces marbles, groups them, cooks them, etc. (12).

Stage I: Definitional Rules and Direct Relations (age range, 4-8 to 6-11; median age, 5-8) (This period includes Scale Types 1 and 2)

The rules have no rationale except that they exist by definition. The consequences also are given by definition. Equivalences that exist between objects are definitional also, either by virtue of direct perception (size, number) or by adult pronouncement (a nickel is worth five cents and so buys five cent object). The groundwork for this type of rule is laid by pre-rule activities when the child learns to imitate the handling and counting of money, learns to recognize differences between coins, and understands in a general or undifferentiated sense that money and buying are connected. Rules of this first stage, in turn, are the basis for the next set which are only partially definitional and are only in part dependent upon rather direct vision.

Stage II: Rules Covering Indirect but Imprecise Relations (age range, 5-9 to 7-2, median age, 6-4) (This period includes Scale Types 3 and 4)

During this stage the child is beginning to grasp relations that involve much more than such rather direct relations as "pay large—get large," "pay five worth—get five worth," etc. The relations emerging are oblique or indirect. But more strikingly, the exact character of the relations tends to be left ambiguous. Even when pressed the child is inarticulate about the connection since he himself knows no other statement of the matter than he has already given. Thus the amount of change returned depends vaguely somehow upon the amount paid by the customer; things can't be bought if they are worth more than one has, but the relations of more and less are imprecise, etc. In one rule—that the storekeeper must be paid else he will lose out—the child conceives of a consequence occurring to someone other than himself. This is an advance over the preceding stage, but the connection between consequences and rule infraction is still definitional rather than rationalized.

The child generally is operating with concepts of value that are not apparent to his immediate perceptions although, as in his confusion over how workers get paid (in part by customers), he may still be misled by his own vision. But objects that are taken as equivalent—what is paid for what —are considerably more heterogeneous and indirectly related than formerly. Thus an activity (working) is now worth money. In the rule that storekeepers only pay workers, and not customers, we see a considerable clarification of a complex set of relationships, but the same taken-for-granted character of the relationship (i.e., the mechanics of payment) marks this rule as it does the other rules of this stage. Nevertheless, this type of rule is clearly a necessary prerequisite for the rules covering the more precise identification of relationships that begins with the next stage.

Stage III: Initiation of Precise, Systematic, Impersonal Relations (age range, 6-10 to 8-9; median age, 7-10) (This period is equivalent to Scale Type 5)

Now the systematic relations that exist among numerical values are comprehended. The child knows the relations between various amounts of money, can work them out symbolically, can return correct amounts of change, and so on. These relationships are quite independent of direct perception and of the ways that people feel about them. They are supra-personal and impersonal. All consequences flow from the nature of the arithmetical arrangements. However, there is a failure to realize that these arithmetical arrangements hold in various situations in which adults would readily apply them; for in these situations the child allows inappropriate moral and personal considerations to be the chief determinant of activity. This will be apparent in the discussion of Stage IV.

Stage IV: Extension of Impersonal Relations to Limited Social Situations (age range, 7-5 to 9-8; median age, 8-7) (This period is equivalent to Scale Type 6)

This is predominantly a period when the child begins to appreciate the extension of an impersonal logic to situations beyond those in which he first learned to apply that logic. Thus he is able to carry over the impersonal system of arithmetic calculation to a concrete money-handling situations, such as, it makes no difference whether the cusomer pays first or whether the storekeeper gives him goods and change first. In other words, this exchange is viewed now as a matter of logic, not simply or primarily a matter of timing. However the granting of credit (which is really a more complicated instance of "it doesn't matter who gives first") still is entangled with temporal and personal considerations; although the child is beginning to understand the extension of arithmetic underlying this set of relations too. Likewise the child now appreciates that the owner gets paid through a subtractive process because he is able finally to align systematically the relations extant among customer-storekeeper-helper-and-manufacturer. But this alignment is made in only a very general way. He balances sets of relations against other sets, but the balancing is imprecise and ambiguous, as will be evident in the discussion of the next two stages.

Stage V: Further Extension of Impersonal Relations and Thus of Systematic Consequences (age range, 6-8 to 10-6; median age, 8-9) (This period is equivalent to Scale Type 7)

The child is at the threshold of understanding the wide and systematic application of those impersonal rules which govern buying-selling transactions. Because his comprehension is almost, though not quite, complete there are two characteristics which distinguish this stage very slightly from the preceding stage.

Profitmaking is sometimes allowed, but the children regard the practice as unfair. It is permitted despite its violation of arithmetic because of the storekeeper's personal motivation to become rich. There is, then, a sharpening of opposition or alignment of purely impersonal (arithmetic) arrangements and moral-personal (but inappropriate) arrangements. Similarly the child believes the owner gets paid and pays his workers not according to impersonal arrangements entirely, but according also to equity and whim. However, both semi-profit and semi-arithmetic (owner and worker) payments represent slight advances over the preceding stage where the extension of impersonal arrangements was more limited and the moral or whimsical was more taken for granted.

The other development marking this stage is a more extensive and articulate working out of consequences that result from the actions of related persons. Thus the storekeeper doesn't cheat, not by definition or because of moral reasons as formerly, but because of calculated consequences to himself if he did. Similarly the distribution system is what it is now because of consequences to various persons if it were not; thus it is understood why manufacturers do not ordinarily sell directly to customers. On the other hand, middlemen, other than storekeepers, are denied, no longer on definitional grounds but because the consequences of such an arrangement would make no sense for anyone.

Stage VI: Completion of Impersonal Rules Applying to a Wide System of Relations (age range, 8-4 to 11-0; median age, 9-9) (This period is equivalent to Scale Type 8)

The child at last stands at the summit of relations which are impersonally regulated. Profit is allowed, as is credit. The payment of storekeeper and of worker, of factoryowner and helper, are all impersonally and systematically regulated.

Stage VII: Calculated Infraction of Impersonal Rules for Personal Motives (age range, 9-7 to 11-6; median age, 11-2) (This period is equivalent to Scale Type 9)

Since the storekeeper is finally conceived of as sometimes tempted to shortchange, the child reasons that, despite the impersonal system of profitmaking, personal (immoral) motives may prevail. These prevail because the storekeeper works out a reasoned calculation of consequences to himself if he is caught and then acts on the basis of his calculation. This represents a distinct advance over the preceding stage since apparently there was then an assumption made that since all these actions are governed by impersonal rules, the rules did so govern all these actions.

DISCUSSION

The rules that we have been discussing have dealt with matters of arithmetic, monetary value, profit, ownership, distribution, and the like. Such rules involve sanctions and punishments; they prescribe and proscribe. Although they regulate rather impersonal sets of relations, the rules are "moral canons" in the accepted usage of the term.

As is clear from our organization of the data, children's awareness of rules can be conceived as developing through a series of stages, each stage being a necessary condition for a movement to the next (15). At initial levels, rules are definitional, consequences are few or envisaged by fiat, action is linked closely with immediate situations and activities, and so on. Rules come increasingly to cover more extensive activities of increasing numbers of related roleplayers. To comprehend such rules the child must learn to take into account simultaneously and systematically increasing numbers of perspectives. As he does this he learns to discount—as Piaget (12) suggested many years ago—his own immediate perspective and perception.

How is this general line of growth to be accounted for? Piaget hypothesized in his *Moral Judgment in the Child* that the early conceptions of rules are absolutistic because of the authoritarian relations that necessarily exist between parent and young child, and that conceptions grow more relativistic and systematic as cooperative relationships spring up between child and others, particularly with his peers. But there is probably no need to ring in such special kinds of social relations, and we are going to suggest below that Piaget's work on thought processes indeed demonstrates this lack of necessity. Nor is it necessary to explain the growth of moral conceptions by recourse to such dubious, or, at any rate, such oversimplified, principles as reward and punishment, pleasure and pain, and learning from specific direct experience "to recognize a common element in a variety of situations (6, p. 439)."

The rules which we have investigated prescribe—as do any rules—sets of relations that exist among general roles, in this instance, those of storekeepers, customers, and others involved in sales transactions. All these roles, as any adult knows, are related systematically to one another. In the child's world, also, these roles are systematically related however odd and deficient and illogical the adult may find the systematization. As our materials bring out, the more advanced the child's conceptions of these roles, the closer his systematization approaches that of the adult.

Now "conception of role" is just what is suggested by the term "conception." It is a conceptualization of a set of activities seen in relationship to other sets of activities. At levels lower than that of adult comprehension, the child discriminates persons, acts, and things in terms of categories or concepts, but the content of his classifications (nickels, storekeepers, selling, etc.) are necessarily rather different than they will be later. As the child advances from stage to stage, the content and definition of his concept undergo continuous change. As new classifications are formed or discovered, old ones change, become revised and qualified. Eventually his classificatory system—said otherwise, his conceptualization of roles—becomes identical with that held by the general community of adults. The more the child's conceptualization approaches the standardized adult one, the more extensive are the connections among his concepts and the more "complex," "generalized," and "abstract" is his systematization of role relationships. This is brought out by studies of non-role concept development, such as that by Ames (1) on concepts of time, but it is equally applicable to studies of role concepts.

A highly generalized and abstract conceptual organization of role activities amounts to an ability to view each roleplayer from the organized perspective of related multiple other roleplayers. This ability, as our materials amply illustrate, is a slow emergent. At the lowest stages, the naming of what is expected of a given roleplayer from the perspective of another roleplayer does occur; but naming is rudimentary and linked closely with concrete situational activity. The more advanced the stage, the more generalized and impersonal becomes the organization of perspectives. This kind of observation was fully adumbrated in the writings of G. Mead (10) who, in explicit if general fashion, discussed the intimate relations between conceptual and role learning. He noted that when a child plays a role-game, enacts a role toward an imaginary other role (mother to postman, for instance) and then reverses these role parts, he is learning to conceive each and to name the activities of each from the standpoint of the other. Mead remarked that eventually the child learns to conceptualize multiple roles simultaneously, as in an organized game where the child conceives how each role looks from the standpoint of other players, where "these different roles . . . have a definite relationship to each other." Mead did not trace the development of this capacity empirically beyond noting the importance of conceptual learning, of play and of games. What is important in his remarks for our discussion here is his emphasis upon the development of (*a*) the ablity to grasp the related perspectives of others and (*b*) the parallel rise of symbols or concepts.

A more recent paper by Hartley and his associates (5), which, like our own, brings out some of the oddities of children's role-conceptions, shows how these conceptions are paralleled by a very incomplete organization of perspectives, although Hartley does not stress the relevance of concepts. He notes, for instance, that for a young child a mother is either always a mother or is in some other role (saleslady), but never both simultaneously. Older children widen the positions from which roleplayers are viewed until an individual finally is conceived, according to Hartley, as momentarily or permanently playing one role but as potentially capable of playing many others *vis-a-vis* many other multiple sets of roleplayers. The inflexibility of the young child is merely the inability to slide in imagination from perspective to perspective as extensively or easily as the adult. The deficiency in Hartley's discussion is that the young child who cannot conceive of his mother simultaneously as a saleslady, nevertheless can conceive of her as a daughter of his grandmother; that is, in his immature systematization of role concepts, certain roles are related and others are not.

Conceptions of roles and conceptions of rules grow *pari passu*. Built into role conceptions are the justifications of motivations for behavior appropriate or inappropriate to enactment of roles (11). A storekeeper acts as he does "because—." At the highest levels of concept development, the justifications are generalized and, at least for such impersonal relations as exist in monetary transactions, highly abstract and impersonal. The rationale for the storekeeper's profit, for instance, is geared in with the rationale underlying the roles of his counter-roleplayers. To talk of rules and punishment for rule-infraction is simply another way of stating role relationships. The young child's inability to grasp the nature or full extent of adult rules means that he is unable to make proper conceptual distinctions; likewise that he is unable to grasp the consequences for certain roleplayers of certain acts committed by any given other roleplayer. Said still otherwise, he does not grasp the values of acts as seen from given standpoints because he cannot identify, designate, or name the position; he cannot put himself into it (15).

The development of a capacity to relate systematically whole sets of roles is surely linked with the general development of children's capacity to think. There is considerable dispute, of course, over whether young children's thought processes are somewhat different from those of adults or just less well informed with facts and experience (19). The later excellent work of Piaget (13), and of Werner (19), Freidson (3), Schuessler and Strauss (14), as well as the literature on schizophrenic, aphasic, and other types of "abnormal" thought by Goldstein and Scheerer (4), Cameron (2), Kasanin (8), Vigotsky (16), Weigl (18) and others, at least tends to support the interdependence of high-order conceptualization and ability to take multiple perspectives extensively, flexibly, and abstractly. Regardless of the outcome of the dispute over whether children and adults think "basically" alike, it is not unreasonable to suppose that growth in the ability to relate multiple perspectives in the social sense is somehow linked with the ability to relate multiple perspectives in the logical sense (cf., Piaget's discussion of logical addition and multiplication, 13).

Any discussion of development in thought processes necessarily raises the question of what Werner and Kaplan (20) have called "saltatory changes" or "developmental shifts." In this recent monograph Werner has pointed out that in his own study, as well as in that of other writers, (*a*) there appear with advancing age genuinely new kinds of thought processes, and (*b*) that the appearance is often sudden or abrupt. In our materials the appearance, stage by stage, of role and rule conceptions indicates the same kind of novel emergent. When the child reaches certain points of conceptualization, very drastic realignment of roles and rules is called for and occurs. Whether shift in alignment is gradual or abrupt our data does not tell us, although it is probable that realignment cannot drag over too long a period, if only because shifts of concept necessarily bring shifts of other concepts in their wake (15).

As a concluding note, it is worthwhile to distinguish between (*a*) the development of a general ability to comprehend moral rules (and social roles) and (*b*) the learning of specific types of rules and roles. Such types of rules and roles—for instance democratic or authoritarian—presumably are learned under specific social conditions and when learned have determinable kinds of effects upon personality. Most research upon children's development of course is concerned with this latter kind of learning. Yet the impact of the learning situation would seem to be dependent upon the level of concept, thought, or role conception of the child. Most or, at least, much research neglects this dependence and thus points up a real need for relating the two kinds of investigation in studies of children.

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THE RELATION OF "PRIMARY MENTAL ABILITIES" IN FIVE- AND SIX-YEAR-OLDS TO SEX OF CHILD AND CHARACTERISTICS OF HIS SIBLING[1]

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PROBLEM AND PROCEDURES

As part of a larger study of the effect upon the personality of children of such family constellation details as sex of child, sex of sibling, ordinal position of child in his sibship and difference in age between child and sibling, it was decided to determine whether intellectual skills would show a significant relationship to these same variables. The question of the effect of the ordinal position of a child upon his intelligence test performance has been much explored as has also the question of the relative performance of the two sexes on various tests. Our study we may expect to make a contribution to the field, however, because (*a*) the interaction of the variables, sex, sib's sex, ordinal position and the age difference between siblings has been investigated as well as the main effects; and (*b*) a different test has been used, namely the SRA Primary Mental Abilities Test, Primary Form (31). Since the subtests of the Thurstone Test are alleged not to be highly correlated (test intercorrelations on the standardization population ranged from +.46 to +.67) and to measure rather specific abilities, it should be of interest to discover whether performance on the "specific abilities" subtests bears any relation to the independent variables mentioned above.

The Primary Mental Abilities Test was given to our subjects by the adjustment teacher in various public schools and by the experimenter or

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her assistant to subjects enrolled in one private school. In the public schools the tests are given to the children either just before or just after they enter the first grade. Hence, the mean age of our subjects in the various subgroups is around 71 months. The information concerning the family constellation items was obtained chiefly from the school entrance records of the children; but, if essential data were missing, the parents of the child were contacted for further information. Since it is unlikely the mothers would report abortions and miscarriages on entering their "first" child in school, those groups of our subjects which we call "first-borns" are probably a mixture of biological and social firsts. Our second-borns, it should be noted too, are not only the second in their families but also the youngest, since our subjects came from two-children families. The children are the biological offspring of the parents with whom they lived; i.e., no adopted or stepchildren are included. With the exception of one private school, public schools in Chicago furnished all the records of the children. Although usually only one of the sibs in a family was studied, it was a condition of the inclusion of a child in the study that both he and his sib be free from gross physical and mental defect. Hence, if gross mental defect is related to any of our independent variables, this relation would not be uncovered by our investigation.

In fact, most selective factors influencing school admission or age at school admission are not neutralized directly in our investigation, as we dealt only with children of ages five and six who were in school. Our information relative to the family, too, was only that which the school had in its file. Hence, such a variable as, age of mother, which might vary rather systematically with ordinal position of the child was not controlled. We also had no information on the total life socio-economic environment of our children. This might, of course, be different for first- and second-borns. However, our efforts to match groups on the basis of the child's present socio-economic environment probably controls this variable substantially.

Lastly, there are doubtless more completed families represented among those groups in which the children differ greatly in age than among those in which the sib spacing is closer. This difference may color some the family attitudes met by the children in our various spacing groups. We do not know to what extent these limitations in controls influence our results but we do not see in the pattern of our significant findings what seem likely effects of the uncontrolled factors listed.

There were 120 children at each of three sib-spacing levels—i.e., the difference in age between the sibs was respectively under two, two to four, and four to six years. At each spacing level there were eight subgroups of 15 subjects as follows: boys with a younger brother, boys with an older brother, boys with a younger sister, boys with an older sister, girls with a younger brother, girls with an older brother, girls with a younger sister, girls with an older sister. The 24 subgroups—representing two ordinal positions for each of three spacings for each of the four possible child's-sex-sib's-sex combinations—were matched individual for individual on the basis of subject's age and the socioeconomic level of the father's occupation, according to the Minnesota Scale (9), as well as neighborhood of residence of the family (19). While absolutely exact matching was not possible, 99 per cent of our subjects were matched in age within six months and 75 per cent within four months. Ninety-three per cent were matched within one status

TABLE I

MEANS AND SIGMAS OF THE AGES OF SUBJECTS AND SIBLINGS IN THE TWENTY-FOUR BASIC SUBGROUPS

DESCRIPTION OF GROUP				AGE IN MONTHS					
Subject		Sibling		Subject		Sibling		Sibling Age Difference	
Sex	*Ordinal Position*	*Sex*	*N*	*Mean*	*Sigma*	*Mean*	*Sigma*	*Mean*	*Sigma*
			I.	SIBLING AGE DIFFERENCE 7–24 MONTHS					
M	2	M	15	71.53	2.92	90.40	4.44	18.87	3.05
M	2	F	15	71.27	2.67	89.00	3.43	17.73	3.72
F	2	M	15	72.27	2.76	91.53	5.26	19.27	3.68
F	2	F	15	71.20	3.02	90.73	5.12	19.53	4.08
M	1	M	15	71.80	2.30	53.27	3.57	18.53	3.12
M	1	F	15	72.00	3.43	53.93	6.77	18.07	4.40
F	1	M	15	71.93	2.60	54.27	5.09	17.67	4.87
F	1	F	15	71.93	2.96	53.20	2.86	18.73	3.80
			II.	SIBLING AGE DIFFERENCE 25–48 MONTHS					
M	2	M	15	70.80	4.10	105.33	7.46	34.53	6.99
M	2	F	15	73.07	3.00	110.73	7.95	37.67	7.02
F	2	M	15	71.47	3.20	108.00	7.07	36.53	5.87
F	2	F	15	72.33	3.70	107.00	7.47	34.67	6.58
M	1	M	15	70.93	3.44	34.47	8.35	36.47	6.35
M	1	F	15	73.00	3.67	36.33	8.48	36.67	7.73
F	1	M	15	70.40	4.14	32.73	9.29	37.67	5.87
F	1	F	15	71.33	2.87	38.00	5.91	33.33	6.25
			III.	SIBLING AGE DIFFERENCE 49–72 MONTHS					
M	2	M	15	70.87	3.96	129.33	9.22	58.47	6.92
M	2	F	15	71.33	4.35	128.13	9.21	56.80	6.51
F	2	M	15	71.40	4.39	126.53	7.82	55.13	5.91
F	2	F	15	71.07	2.54	129.93	5.87	58.87	5.77
M	1	M	15	70.60	4.54	15.67	6.00	54.93	5.79
M	1	F	15	71.00	3.86	13.67	5.92	57.33	6.47
F	1	M	15	71.40	3.16	15.00	4.94	56.40	4.98
F	1	F	15	71.53	2.56	12.53	7.21	59.00	7.34

level on the occupation scale and 88 per cent within one rank on the neighborhood scale. Level IV in the Minnesota Scale, which is the farm group, was not represented in the study. For a description of the groups, see Tables 1 to 3.

TABLE 2

DISTRIBUTION OF SUBJECTS IN TWENTY-FOUR BASIC GROUPS (EACH WITH AN *N* OF 15) IN TERMS OF FATHER'S OCCUPATION

DESCRIPTION OF GROUP			*Age Difference between Siblings 7 to 24 Months*						*Age Difference between Siblings 25 to 48 Months*						*Age Difference between Siblings 49 to 72 Months*					
Subject		Sibling	CLASS OF FATHER'S OCCUPATION																	
Sex	*Ordinal Position*	*Sex*	*I*	*II*	*III*	*V*	*VI*	*VII*	*I*	*II*	*III*	*V*	*VI*	*VII*	*I*	*II*	*III*	*V*	*VI*	*VII*
			NUMBER OF SUBJECTS																	
M	2	M	5	1	2	6	1	–	3	3	4	4	–	1	3	3	6	2	–	1
M	2	F	2	2	6	4	1	–	4	3	4	3	1	–	1	7	3	1	2	1
F	2	M	3	2	4	6	–	–	2	5	3	3	2	–	2	4	6	3	–	–
F	2	F	2	3	6	3	1	–	3	3	5	4	–	–	1	5	4	3	2	–
M	1	M	2	4	3	4	2	–	5	1	3	6	–	–	4	3	3	4	1	–
M	1	F	4	3	2	5	1	–	3	3	4	4	–	1	3	4	2	3	3	–
F	1	M	4	3	4	4	–	–	3	3	3	4	2	–	2	4	5	3	–	1
F	1	F	2	3	4	5	1	–	2	4	5	4	–	–	3	5	3	3	–	1

TABLE 3

DISTRIBUTION OF SUBJECTS IN THE TWENTY-FOUR BASIC SUBGROUPS (EACH WITH AN *N* OF 15) ON THE BASIS OF NEIGHBORHOOD OF RESIDENCE

DESCRIPTION OF GROUP			*Age Difference between Siblings 7 to 24 Months*					*Age Difference between Siblings 25 to 48 Months*					*Age Difference between Siblings 49 to 72 Months*				
Subject		Sibling	SOCIO-ECONOMIC CLASSIFICATION OF NEIGHBORHOOD OF RESIDENCE														
Sex	*Ordinal Position*	*Sex*	*1*	*2*	*3*	*4*	*5*	*1*	*2*	*3*	*4*	*5*	*1*	*2*	*3*	*4*	*5*
			NUMBER OF SUBJECTS														
M	2	M	8	5	–	2	–	6	4	1	3	1	9	5	1	–	–
M	2	F	7	3	–	4	1	8	1	4	–	2	8	3	1	3	–
F	2	M	9	4	–	1	1	6	2	3	4	–	7	4	1	2	1
F	2	F	8	3	–	4	–	7	3	1	4	–	4	8	1	1	1
M	1	M	10	3	1	1	–	9	–	5	1	–	11	1	1	1	1
M	1	F	9	3	2	1	–	8	1	4	2	–	7	1	3	3	1
F	1	M	9	–	3	2	1	8	4	3	–	–	11	1	1	2	–
F	1	F	7	4	1	3	–	6	3	4	2	–	9	2	1	2	1

TABLE 4

MEAN AGE QUOTIENTS FOR THE VARIOUS SUBGROUPS OF THE VERBAL AND PERCEPTUAL SUBTESTS OF THE THURSTONE PRIMARY MENTAL ABILITIES TEST

SUBGROUP			*Verbal Subtest*				*Perceptual Speed Subtest*			
Subject		Sibling	AGE DIFFERENCE BETWEEN SIBLINGS IN MONTHS							
Sex	*Ordinal Position*	*Sex*	*7–24*	*25–48*	*49–72*	*Total*	*7–24*	*25–48*	*49–72*	*Total*
			QUOTIENT MEANS				QUOTIENT MEANS			
M	2	M	110.67	121.67	118.33	116.89	99.33	106.00	112.33	105.89
M	2	F	114.67	116.00	110.00	113.56	104.67	109.67	99.00	104.44
F	2	M	119.33	114.67	118.00	117.33	110.33	107.67	105.33	107.78
F	2	F	111.33	119.33	114.67	115.11	111.33	102.67	106.00	106.67
M	1	M	116.00	128.67	118.33	121.00	98.00	103.67	101.33	101.00
M	1	F	116.33	119.33	113.33	116.33	95.67	101.67	97.67	98.33
F	1	M	112.00	117.00	114.33	114.44	102.67	103.00	107.00	104.22
F	1	F	107.33	105.33	109.67	107.44	106.00	100.00	96.33	100.78
M	2	M or F	112.67	118.83	114.17	115.22	102.00	107.83	105.67	105.17
F	2	M or F	115.33	117.00	116.33	116.22	110.83	105.17	105.67	107.22
M	1	M or F	116.17	124.00	115.83	118.67	96.83	102.67	99.50	99.67
F	1	M or F	109.67	111.17	112.00	110.94	104.33	101.50	101.67	102.50
M or F	2	M	115.00	118.17	118.17	117.11	104.83	106.83	108.83	106.83
M or F	2	F	113.00	117.67	112.33	114.33	108.00	106.17	102.50	105.56
M or F	1	M	114.00	122.83	116.33	117.72	100.33	103.33	104.17	102.61
M or F	1	F	111.83	112.33	111.50	111.89	100.83	100.83	97.00	99.56
M	1 or 2	M	113.33	125.17	118.33	118.94	98.67	104.83	106.83	103.44
M	1 or 2	F	115.50	117.67	111.67	114.94	100.17	105.67	98.33	101.39
F	1 or 2	M	115.67	115.83	116.17	115.89	106.50	105.33	106.17	106.00
F	1 or 2	F	109.33	112.33	112.17	111.28	108.67	101.33	101.17	103.72
M	1 or 2	M or F	114.42	121.42	115.00	116.94	99.42	105.25	102.58	102.42
F	1 or 2	M or F	112.50	114.08	114.17	113.58	107.58	103.33	103.67	104.86
M or F	1 or 2	M	114.50	120.50	117.25	117.42	102.58	105.08	106.50	104.72
M or F	1 or 2	F	112.42	115.00	111.92	113.11	104.42	103.50	99.75	102.56
M or F	2	M or F	114.00	117.92	115.25	115.72	106.42	116.50	105.67	106.19
M or F	1	M or F	112.92	117.58	113.92	114.81	100.58	102.08	100.58	101.08
M or F	1 or 2	M or F	113.46	117.75	114.58	115.26	103.50	104.29	103.12	103.64

RESULTS AND DISCUSSION

The group means for the total and subtest quotient scores are presented in Tables 4 to 6. (The data for the Motor Test are not considered in this report.) The analysis of variance data for the total group are given in Tables 7 to 9. In the interest of saving tables, the analysis of variance data for the various sib age-difference levels are not presented, but we shall comment on all significant relations at the various spacings. The error term used in the denominator in computing the *F* was the residual variance. The quotient score distributions for the population are essentially normal. The Bartlett Test indicates there is no reason to believe that the various subgroups are drawn from populations with different variances.

TABLE 5

MEAN AGE QUOTIENTS FOR THE VARIOUS SUBGROUPS OF THE QUANTITATIVE AND SPACE SUBTESTS OF THE THURSTONE PRIMARY MENTAL ABILITIES TEST

SUBGROUP			*Quantitative Subtest*				*Space Subtest*			
Subject		Sibling	AGE DIFFERENCE BETWEEN SIBLINGS IN MONTHS							
Sex	*Ordinal Position*	*Sex*	*7–24*	*25–48*	*49–72*	*Total*	*7–24*	*25–48*	*49–72*	*Total*
			QUOTIENT MEANS				QUOTIENT MEANS			
M	2	M	107.33	113.00	114.67	111.67	102.00	109.00	110.33	107.11
M	2	F	109.33	117.00	106.67	111.00	105.33	110.00	105.00	106.78
F	2	M	125.00	115.00	116.67	118.89	115.67	108.33	104.33	109.44
F	2	F	107.67	116.33	117.67	113.89	112.67	107.33	104.67	108.22
M	1	M	109.67	124.00	110.67	114.78	106.00	114.00	108.00	109.33
M	1	F	112.00	106.67	115.33	111.33	108.33	106.33	101.33	105.33
F	1	M	112.00	119.00	113.33	114.78	100.00	111.00	108.00	106.33
F	1	F	113.67	108.67	107.33	109.89	104.33	103.67	103.33	103.78
M	2	M or F	108.33	115.00	110.67	111.33	103.67	109.50	107.67	106.94
F	2	M or F	116.33	115.67	117.17	116.39	114.17	107.83	104.50	108.83
M	1	M or F	110.83	115.33	113.00	113.06	107.17	110.17	104.67	107.33
F	1	M or F	112.83	113.83	110.33	112.33	102.17	107.33	105.67	105.06
M or F	2	M	116.17	114.00	115.67	115.28	108.83	108.67	107.33	108.28
M or F	2	F	108.50	116.67	112.17	112.44	109.00	108.67	104.83	107.50
M or F	1	M	110.83	121.50	112.00	114.78	103.00	112.50	108.00	107.83
M or F	1	F	112.83	107.67	111.33	110.61	106.33	105.00	102.33	104.56
M	1 or 2	M	108.50	118.50	112.67	113.22	104.00	111.50	109.17	108.22
M	1 or 2	F	110.67	111.83	111.00	111.17	106.83	108.17	103.17	106.06
F	1 or 2	M	118.50	117.00	115.00	116.83	107.83	109.67	106.17	107.89
F	1 or 2	F	110.67	112.50	112.50	111.89	108.50	105.50	104.00	106.00
M	1 or 2	M or F	109.58	115.17	111.83	112.19	105.42	109.83	106.17	107.14
F	1 or 2	M or F	114.58	114.75	113.75	114.36	108.17	107.58	105.08	106.94
M or F	1 or 2	M	113.50	117.75	113.83	115.03	105.92	110.58	107.67	108.06
M or F	1 or 2	F	110.67	112.17	111.75	111.53	107.67	106.83	103.58	106.03
M or F	2	M or F	112.33	115.33	113.92	113.86	108.92	108.67	106.08	107.89
M or F	1	M or F	111.83	114.58	111.67	112.69	104.67	108.75	105.17	106.19
M or F	1 or 2	M or F	112.08	114.96	112.79	113.28	106.79	108.71	105.62	107.04

TABLE 6

MEAN AGE QUOTIENTS FOR THE VARIOUS SUBGROUPS OF THE TOTAL SCORE ON THE THURSTONE PRIMARY MENTAL ABILITIES TEST

DESCRIPTION OF GROUP			*Total Score*			
Subject		Sibling	SIBLING AGE DIFFERENCE IN MONTHS			
Sex	*Ordinal Position*	*Sex*	*7–24*	*25–48*	*49–72*	*Total*
			QUOTIENT MEANS			
M	2	M	105.00	113.33	114.00	110.78
M	2	F	109.00	113.33	104.00	108.78
F	2	M	117.67	112.00	112.00	113.89
F	2	F	110.33	111.67	111.33	111.11
M	1	M	106.67	116.67	109.33	110.89
M	1	F	107.33	107.67	107.00	107.33
F	1	M	107.00	113.00	109.00	109.67
F	1	F	107.33	103.67	104.00	105.00
M	2	M or F	107.00	113.33	109.00	109.78
F	2	M or F	114.00	111.83	111.67	112.50
M	1	M or F	107.00	112.17	108.17	109.11
F	1	M or F	107.17	108.33	106.50	107.33
M or F	2	M	111.33	112.67	113.00	112.33
M or F	2	F	109.67	112.50	107.67	109.94
M or F	1	M	106.83	114.83	109.17	110.28
M or F	1	F	107.33	105.67	105.50	106.17
M	1 or 2	M	105.83	115.00	111.67	110.83
M	1 or 2	F	108.17	110.50	105.50	108.06
F	1 or 2	M	112.33	112.50	110.50	111.78
F	1 or 2	F	108.83	107.67	107.67	108.06
M	1 or 2	M or F	107.00	112.75	108.58	109.44
F	1 or 2	M or F	110.58	110.08	109.08	109.92
M or F	1 or 2	M	109.08	113.75	111.08	111.31
M or F	1 or 2	F	108.50	109.08	106.58	108.06
M or F	2	M or F	110.50	112.58	110.33	111.14
M or F	1	M or F	107.08	110.25	107.33	108.22
M or F	1 or 2	M or F	108.79	111.42	108.83	109.68

Verbal Test

In the case of the Verbal Test (Tables 4 and 7), there are some interesting significant relations with sex, sibling's sex and ordinal position. The child sex differences, while rather consistently favorable to the male, are significant only in the subgroups among the first-borns when the age difference between the sibs is two to four years. Again, while those children with a

TABLE 7

ANALYSIS OF VARIANCE OF THE AGE QUOTIENTS FOR THE PERCEPTUAL AND VERBAL SUBTESTS OF THE THURSTONE PRIMARY MENTAL ABILITIES TEST

		Verbal Subtest			Perceptual Speed Subtest		
Source of Variance	*df*	*Sum of Squares*	*Estimate of Variance*	*F*	*Sum of Squares*	*Estimate of Variance*	*F*
Total	359	3301.598			4171.323		
Between groups	23	345.198	15.009		307.990	13.391	
Within groups	336	2956.400	8.799		3863.333	11.498	
Between replications	14	247.306	17.665		175.323	12.523	
Residual	322	2709.094	8.413		3688.010	11.453	
Between Variables:							
Between sex groups	1	40.669	40.669	4.834	21.511	21.511	
Between sibling's sex groups	1	66.736	66.736	7.932	16.900	16.900	
Between ordinal-position groups	1	3.025	3.025		94.045	94.045	8.211
Between spacing groups	2	47.540	23.770		3.406	1.703	
First-order Interactions:							
Subject's sex—sibling's sex	1	.336	.336		.044	.044	
Subject's sex—ordinal position	1	68.469	68.469	8.138	.544	.544	
Subject's sex—spacing	2	29.105	14.553		64.338	32.169	
Sibling's sex—ordinal position	1	8.403	8.403		2.844	2.844	
Sibling's sex—spacing	2	8.905	4.453		44.816	22.408	
Ordinal position—spacing	2	.649	.324		1.204	.602	
Second-order Interactions							
Subject's sex—sibling's sex—ordinal position	1	2.669	2.669		.278	.278	
Subject's sex—sibling's sex—spacing	2	28.272	14.136		10.772	5.386	
Subject's sex—ordinal position—spacing	2	3.839	1.920		2.072	1.036	
Sibling's sex—ordinal position—spacing	2	21.905	10.952		.505	.252	
Third-order Interaction:							
Subject's sex—sibling's sex—ordinal position—spacing	2	14.676	7.338		44.711	22.356	

TABLE 8

ANALYSIS OF VARIANCE OF THE AGE QUOTIENTS FOR THE QUANTITATIVE AND SPACE SUBTESTS OF THE THURSTONE PRIMARY MENTAL ABILITIES TEST

		Quantitative Subtest			Space Subtest		
Source of Variance	*df*	*Sum of Squares*	*Estimate of Variance*	*F*	*Sum of Squares*	*Estimate of Variance*	*F*
Total	359	4804.492			5498.975		
Between groups	23	358.759	15.598		216.308	9.405	
Within groups	336	4445.733	13.231		5282.667	15.722	
Between replications	14	369.075	26.363		189.767	13.555	
Residual	322	4076.658	12.660		5092.900	15.816	
Between Variables:							
Between sex groups	1	16.900	16.900		.136	.136	
Between sibling's sex groups	1	44.100	44.100		14.803	14.803	
Between ordinal-position groups	1	4.900	4.900		10.336	10.336	
Between spacing groups	2	21.542	10.771		23.267	11.634	
First-order Interactions:							
Subject's sex—sibling's sex	1	7.511	7.511		.069	.069	
Subject's sex—ordinal position	1	30.044	30.044		15.625	15.625	
Subject's sex—spacing	2	17.716	8.858		16.422	8.211	
Sibling's sex—ordinal position	1	1.600	1.600		5.625	5.625	
Sibling's sex—spacing	2	8.149	4.075		25.755	12.878	
Ordinal position —spacing	2	2.150	1.075		12.356	6.178	
Second-order Interactions							
Subject's sex—sibling's sex—ordinal position	1	1.878	1.878		1.225	1.225	
Subject's sex—sibling's sex—spacing	2	24.105	12.052		5.955	2.978	
Subject's sex—ordinal position—spacing	2	7.372	3.686		62.066	31.033	
Sibling's sex—ordinal position—spacing	2	110.516	55.258	4.365	17.266	8.633	
Third-order Interaction:							
Subject's sex—sibling's sex—ordinal position —spacing	2	60.276	30.138		5.403	2.702	

TABLE 9

ANALYSIS OF VARIANCE OF THE AGE QUOTIENTS FOR THE TOTAL TEST—THURSTONE PRIMARY MENTAL ABILITIES TEST

Source of Variance	*df*	*Sum of Squares*	*Estimate of Variance*	*F*
Total	359	2915.531		
Between groups	23	209.398	9.104	
Within groups	336	2076.133	8.054	
Between replications	14	184.824	13.202	
Residual	322	2521.309	7.830	
Between Variables:				
Between sex groups	1	.803	.803	
Between sibling's sex groups	1	38.025	38.025	4.856
Between ordinal position groups	1	30.625	30.625	3.911
Between spacing groups	2	21.706	10.853	
First-order Interactions:				
Subject's sex—sibling's sex	1	.803	.803	
Subject's sex—ordinal position	1	18.225	18.225	
Subject's sex—spacing	2	23.438	11.719	
Sibling's sex—ordinal position	1	2.669	2.669	
Sibling's sex—spacing	2	12.816	6.408	
Ordinal position—spacing	2	.716	.358	
Second-order Interactions:				
Subject's sex—sibling's sex—ordinal position	1	.025	.025	
Subject's sex—sibling's sex—spacing	2	12.771	6.386	
Subject's sex—ordinal position—spacing	2	3.049	1.524	
Sibling's sex—ordinal position—spacing	2	23.872	11.936	
Third-order Interaction:				
Subject's sex—sibling's sex—ordinal position—spacing	2	19.855	9.928	

male sib score higher than those with a female at all spacings, the subgroup differences are significant only among first-borns at the two-to-four-year spacing and at both ordinal positions when the sibs differ in age by four to six years. No significant relations between verbal score and any of our variables are noted at the closest spacing, the most conspicuous differences occurring when the sibs differ in age by two to four years.

With all the comment there is in the psychological literature about the greater verbal skills and interests of girls (6, 20, 23, 28, 29, 36), we were surprised by our finding that first-born boys tend to excel girls in the Verbal Test and furthermore that children with a male sib tend to score higher than do those with a female sib. It is true that there are many studies which inform of no consistent sex differences in performance on tests of vocabulary, and other language and reading skills (1, 5, 12, 24, 27, 30), and some in which boys are reported superior to girls (8, 13). That our boys do better on the Verbal Test which is heavily saturated with Thurstone's Factor V (Verbal Meaning) confirms Hobson's (13) finding that boys score higher than girls in V. While Havighurst and Breese (11) in a population of thirteen-year-olds noted no sex difference in performance on the V factor tests, both of these authors and Hobson agree that girls tend to score higher than boys do in W (Word Fluency). The hypothesis that girls tend to be more fluent and boys more understanding of word meanings enables us to reconcile some of the apparently contradictory findings mentioned above.

It is possible that if a child has his parents' undivided attention for more than two years before the sib arrives and at a time when he is making most rapid progress in acquiring speech that he will be relatively more influenced by their verbal and intellectual stimulation than one would be whose sib follows close on his heels. There is evidence that parents talk to and instruct their second-borns less than they do to their first-borns (Lasko, 16). Hence, one might expect first-borns, especially at the wider spacings, to score higher on the Verbal Test than second-borns. But then, if parental stimulation is important, why only in the case of males should our first-borns excel seconds conspicuously? Since the test content seems unlikely as an explanation of the sex differences we observed, because of the pattern of the group means, and since a marked sex difference is not noted at both ordinal positions, we are led to an explanation of our results in terms of the greater range of experience which boys have because of their natures and social treatment. They are very active and get around more on their own (10, 17). This experience we think tends to increase vocabulary and understanding of word meanings.

There is evidence, too, that first-born boys are shown special devotion by their mothers (Sears *et al.*, 25). This attention expressed in part in much instruction and mature verbal stimulation may result in a relatively large word understanding for the boy. Since, furthermore, the influence of the male sib is about equal at both ordinal positions, we gain support for the hypothesis that the male is a more stimulated and stimulating creature than is the female. A brother alerts his sib more, either through the jealousy he excites, his challenging or the experience extension he provides, than does a sister and this results in enriching the word understanding of the sib. We have evidence that at the middle spacing, when the sex and sib-sex differences are the greatest, that the first-born males tend to be relatively jealous, quarrelsome, exhibitionistic, loud and insistent on their rights, conditions which should make the males a challenge to the sib as well as serve as evidence that they are themselves high strivers. At the wider spacings those children with a male sib are rated relatively high on competitiveness, leadership and tendency to insist on rights as compared with those subjects with a female sib, conditions which might throw light on the former's greater word understanding.

Perceptual Speed Test

In the total population, ordinal position is the only variable significantly related to score on the Perceptual Speed Test (Tables 4 and 7), first-borns showing themselves consistently less discriminating than second-borns. At the under-two-year spacing the girls score significantly higher than do the boys but when the sibs differ more in age there are no sex differences to be noted. At the widest spacing those children with a brother excel, on the average, those whose sib is a female.

The second-born, we suspect, though he receives less verbal stimulation and instruction from his parents than the first-born, is challenged in a concrete way more by the sib than is the first-born. The duration of the interaction with the sib is also longer for the second-born. Some of the first-borns at the widest spacing had had a sibling for only six months when they were tested and so can be expected to be more like an only child. The challenge given the second-born by his older sib makes the former more observing and alert to details. The girl, who is less aggressive than the boy and has to hold her own, perhaps, by being more observant, if her sib is very near in age and ability, needs probably to be particularly attentive to details in order to defend her interests, because her competitive sib has much contact with her, whether he is older or younger. At the wider spacings the girl may be less alerted because her common interests with and her contact with her sib is less. Also if the sib is a girl and greatly different in age, she may not be particularly stimulating because she, as a female, is relatively more passive than a brother. It is possible, too, since boys tend to receive more attention from the mother than do girls, that jealousy is a part of the alerting mechanism that makes children whose sibs are males more discriminating or attentive to perceptual details.

Quantitative Test

There is only one significant relation between score on the Quantitative Test and the variables studied, namely, the interaction between sib's sex, ordinal position and spacing (Tables 5 and 8). At the two-to-four-year spacing the first-borns with a male sib score higher than those with a female sib. Among second-borns none of the sib's-sex group differences are significant. The variable, sib's sex, in the total group shows an almost "significant" relation. Again it is the child with a male sib who scores higher.

What interests us is that the sex difference is not significant, since boys are alleged to be more mathematically inclined than are girls (3, 4, 12, 24, 35). We have no explanation for our results, except possibly that of the greater alerting achieved by a male sib, especially for his sister. This mechanism has been mentioned earlier. Perhaps a vigorous, charming, two-to-five year old male sib would stimulate the jealous older child (especially a sister) to keep track of things, e.g., to learn to count in order to insure getting a just share. The Quantitative Test is much concerned with counting and vocabulary for quantitative relations. In counting and routine computation, girls generally are reported to do as well as boys (3, 11, 12, 13, 24). Perhaps males would have done better than females had the Quantitative Test included more tasks of a problem-solving type, since there is some evidence that boys excel in problem-solving (3, 4, 12, 24).

Space Test

Space Test scores show no significant relations in the case of total population with any of our independent variables (Tables 5 and 8). This was a surprise to us, as findings generally, though no subjects as young as ours have been studied, indicate that males excel in whatever it is that space tests measure (7, 11, 13, 18, 22, 26). At the under-two-year spacing, however, the interaction between child's sex and ordinal position is significant. Among second-borns, girls score higher than boys, whereas among first-borns the reverse obtains, the sex differences here being small. We have no explanation, in which we have much confidence, to suggest for our finding. Perhaps second-born girls, competing vigorously with their slightly older brother, are not only more observant generally (see Perceptual Speed Test) but also more attentive to spatial relations.

Total Test

Sib's sex and ordinal position, as might be expected from the relations noted in the subtests, are related significantly to the total performance on the Primary Mental Abilities Test (Tables 6 and 9). Second-borns excel first-borns and those with a male sib do better than do those with a female sib. The finding that second-borns score higher than first-borns is congruent with the finding of Thurstone and Jenkins (32, 33) and of Willis (34) and is out of line, possibly, though our instruments differ, with that of Hsiao (14) and Jones and Hsiao (15). That the possession of a male sib seems to influence performance on the test has, as we have already suggested, made us wonder, especially since males themselves do not necessarily excel females. As explained earlier, we think the vigorous, aggressive, competitive male makes his sib more alert than does the more passive female—i.e., keeps the sib on its toes. It isn't that the male has greater skill or knowledge but rather that he, by the challenge he presents, stimulates or alerts his sib more than does a girl. Jealousy of him because he tends to be favored by his mother may also spark the alerting.

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CHILD REARING AND THE CHARACTER STRUCTURE OF THE MOTHER[1]

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The purpose of this study was to test the hypothesis that the rearing of a young child, viewed as socialization, is primarily an expression of the mother's character structure[2] as it is integrated into the maternal role and as the mother interacts with the child in that role rather than the result of specific rearing practices and techniques.[3] A methodology was developed using interdisciplinary concepts of social role and social interaction to explore the relative effect of these two sets of influences. The child's response is studied first in terms of his interaction with the "total mother person" and, second, as he reacts to the mother's rearing techniques. Although the child is subject to other influences, only the mother is considered here since she is the focal parent in relation to rearing the young child.

The study indicates that evaluations of child rearing practices are of little value unless understood as aspects of a dynamic process of socialization dependent on the social interaction of those individuals concerned. This is of importance for a more accurate assessment of acculturation and for preventive mental health and research programs. The hypothesis also offers some explanation of the wide variations in child rearing and child adjustment within a cultural subgroup, as revealed in previous studies (3, 6).

CONCEPTUAL FRAMEWORK

The family is not viewed as a closed system, but as interdependent with other societal institutions. It is a group with a history of its own as well as a "unity of interacting personalities each with a history (2, p. 6)." Continual

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[1] This study was undertaken as one aspect of a larger study on "Family Diagnosis" being conducted by Dr. Nathan W. Ackerman, Assistant Clinical Professor of Psychiatry, Columbia University. The present report is an abstract of a master's thesis in the Sociology Department at Columbia University. The author wishes to express her gratitude to Dr. Ackerman for his many suggestions and criticisms.

[2] The biological component in maternal behavior is not excluded, but the emphasis here is mainly on maternal character.

[3] Talcott Parsons states that ". . . the presumption is that the specific details of child training practice are likely to be primarily significant in their capacity as expressions of the attitudes of the socializing agents, rather than through their independent intrinsic effects. It seems probable that the strong emphasis on the latter in some circles has been colored by seeing the socialization process in terms of reinforcement theory of learning alone without reference to the processes of interaction in roles. . . ." (5, p. 215).

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modifications of the group and its members derive from the multiple interactions of societal members as they fulfill their ascribed and achieved social roles.

A comprehensive study of social interaction should include the various levels on which interaction occurs. On one level are the interactions of the individuals and their role behavior in the specific group situation, as well as the dynamics of the group as a unit. On another level are the underlying interactions: first, the meaning—unconscious, symbolic and real—which the individual himself feels and, second, the meaning which he attributes to other individuals as he interacts with them. Psychoanalytic concepts of underlying attitudes, motives and mechanisms must be added to the descriptive features of anthropological study and the sociological concern with human interaction on the behavior level.

Character structure, part of personality, is defined here as the relatively fixed sum total of habitual attitudes developed as reactions to life situations which determine habitual reactions to the world and the individual's socially oriented behavior. Through a process of accommodation to the expectations assigned to roles, modifications of social roles occur. The reciprocity, characteristic of social roles, the clarity of cultural definition of role expectations, and the degree of success of integration of character traits to meet role requirements will determine the degree of achievement in that role. It is the character structure which determines perception of the role, ability to reciprocate, and ability to integrate traits and to meet real and perceived role requirements. The mother's character structure should then provide the clues to her maternal behavior and conduct with the child.

Socialization is viewed as a process of mutual interaction between the person socialized and the socializing agent, in which each is ascribed a role which includes expectations of behavior (5, p. 208). The processes and content are structured by the overtly accepted culture and sub-culture patterns of the family in which the goals are implicit. In addition, patterns of interaction of the two parents as parents and as marital partners, as well as the child's reaction to his parents, affect total family interaction and individual role behavior. The responses of the child become the indicia of his adaptation to socialization and hence to his environment.

SUBJECTS AND SOURCE OF DATA

The population studied was 25 Jewish, urban, lower middle-class families selected at random at a psychoanalytically oriented mental health clinic and nursery school.[4] The mean age of the 16 boys and 9 girls at referral was 36 months; the range was from two to six years. All were first children. The mean age of the fathers and mothers at birth of child was 33 years and 28 years respectively. All fathers were either professional or white collar workers with an average income of $4200 a year. More than half the parents were college graduates and only one did not graduate from high school.

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[4] Council Child Development Center, New York City.

The data used derive from a series of intake interviews with mother, father and child by a psychiatric case worker, psychological tests such as Rorschach, TAT, etc., individual therapy interviews with family members, group therapy sessions in some cases, nursery teacher evaluation and observation, and analysis of families at staff meetings. The author made home visits to 19 families focused on family interaction patterns and evaluation of environmental factors.

PROCEDURE

Although the mother's role behavior depends on her character structure, the child does not react to the character structure in isolation. The principal determinant of his response is his *total* perception of the mother. This totality which the child selectively perceives according to his needs and to which he responds is called here the "total mother person." A schedule was used to analyze both underlying dynamics and overt behavior of (*a*) the "total mother person," separated into its component variables of character structure pertinent to fulfillment of the maternal role, integration of these traits into that role, and maternal conduct; and (*b*) the child's response as a measure of his adjustment to the socialization process. Secondly, three rearing practices, weaning, feeding, and toilet training, were analyzed and scored for each case.

Because the mother is the primary influence and frequently the mediator of other influences, these other influences on the child are conceptualized in the schedule in terms of the mother's conduct. The degree of the mother's ability to shift her behavior in harmony with the child's development and actual events must also be considered. This means a genetic approach is one prerequisite for analysis.

Another prerequisite is a knowledge of the complex of the mother's underlying attitudes and motivations for which multiple criteria are essential. The mother's character structure, its uniqueness already established at the time of the child's birth, may be described as the independent variable.

The maternal role becomes the frame of reference of the child's motive patterns as he interacts with his mother and a social norm for perceiving her (4). The mother's character structure determines her ability to invest her inner self in the role and to respond to her perception of role requirements and cultural pressures to meet these requirements.

The mother's patterns of interaction in her actual conduct with the child are viewed as a series of influences on the child. In this context, methods of weaning, feeding and toilet training are rated on the degree of their adaptation to the needs of the child at each stage of his development. Because of their widely accepted importance, the three areas of social discipline are correlated separately with the child's total adjustment. Of significance here is the average behavior of the mother in each area as reported by her and also as professionally observed.

The child's response to socialization is the dependent variable. It will indicate the degree of success of his total adjustment and will provide some indication of his feelings and attitudes toward his mother. To test the hypothesis, his response is first related to the total maternal socialization and then to the specific rearing techniques used by the mother. The criteria for analysis of the child's response rest on the degree of satisfaction of his basic needs and his overt response and reactions to his mother's behavior. The success he will achieve in learning to take the role of the other will depend on the degree of satisfaction of fundamental needs.

The following schedule is presented in some detail because of its importance to both the methodology and content of the study.

Schedule for Analysis and Scoring of the Data

I. *Total Mother Person*

A. Mother's character structure (underlying attitudes and dynamics). Average of items equals adequacy of adjustment.

1. Image of self (Rate: extremely confused—little or no confusion)

Indicators: Degree of instablity of self as child; successful identification, denial of insecurity as child, compensatory security. Degree of conflicted sex identification; rejection of men and female role, anxiety re sex, child birth, having children. Degree of fulfillment of self; satisfaction with self, fulfillment of goals re marriage, love, achievement, discrepancy between realistic and fantasy goals, strength of compensatory mechanisms.

2. Mastery of self (Rate: unsuccessful—successful)

Indicators: Degree of adequacy of self image, self understanding, self control, submission-dominance behavior as need to control others or be controlled, fear of aggressiveness, belligerence, preoccupation with hurting and being hurt; ability to assert real self, utilize capacities; accompanying anxiety as evasion, indecision, depression and compulsiveness.

3. Interpersonal relations (Rate: very poor—good)

Indicators: Degree of capacity for closeness and empathy, identification, rapport, detachment, need for control of aggression, hostility, dependency, need to control others, preoccupation with fear of injury, perception of reality.

4. Affects. Average of following items.

a. Quality of affects (Rate: poor quality—good quality)

Indicators: Degree of spontaneity, depth, stability, appropriateness, flexibility.

- b. Range of emotional interests (Rate: narrow range—wide range)
  Indicators: Degree of constriction of affects, capacity for pleasure (absence of danger), absence of pleasure (pain) as defense against punishment.
- c. Expression-control of emotions (Rate: inappropriate—appropriate)
  Indicators: Degree of guilt, fear of injury to self and others, lack of control or over-control, suppression and inhibition.

5. Rigidity-flexibility (Rate: rigid—flexible)
   Indicators: Degree of ability to adapt to people and life situations, anxiety for which rigid control is necessary.

B. Integration of character traits to meet maternal role requirements (overt and underlying attitudes). Average of items equals ability to integrate into role.

1. Integration of self in maternal role (Rate: unsuccessful—successful)
   Indicators: Degree of inferiority of image of self as mother, confidence in ability to carry out maternal function, avoidance or assertion of self in role, fear of loss of control of hostile urges, guilt (especially with respect to underlying rejection of child), anxiety, aggression.
2. Interpersonal relations. Average of the following items.
   - a. Togetherness with child (Rate: insufficient—sufficient)
     Indicators: Degree of ability to meet child's need for love and physical closeness, narcissism in affective identification, empathy, respect for self of child, realistic accommodation, ability to separate from the child positively, capacity for pleasure in child.
   - b. Control of emotional urges (Rate: inadequate—adequate)
     Indicators: Degree of ability to control anxiety and hostility, over-control or lack of control, control in relation to self as threat to child or to child as threat to self.
3. Rigidity-flexibility (Rate: rigid—flexible)
   Indicators: Degree of ability to accommodate self to child and to modify behavior to meet child's needs.

C. Maternal conduct (observed and overt conduct in care of child). Average of items equals degree of quality of child care.

1. Emotional attitudes (Rate: inadequate—adequate)
   Indicators: Degree of consistency, rejection or over-protection, affection, warmth, emotional accommodation to child, understanding of needs, satisfaction with child's response, anxiety, rationalization, intellectualization, respect for self of child.
2. Social discipline. Average of following items.
   - a. Discipline of child's overall behavior
     (Rate: not adapted to child's needs—adapted).

Indicators: Degree of need to dominate child, rigidity of standards of behavior, obedience requirements, positive adaptation to child as opposed to expediency, ability to limit and control child suitably, consistency, appropriateness of punishment-reward system, ability to separate realistically from child.

b. Discipline of primary drives (rearing practices) (Rate on average of the following: not adapted to child's needs—adapted)

(1) Toilet training

Indicators: Degree of rigidity of routine, need to control child's body, use of coercion or extreme permissiveness, consistency, appropriateness of punishment-rewards, ability to modify methods, adaptation to child's maturational level.

(2) Feeding

Indicators: Method and timing of weaning— use of force, abruptness, arbitrariness, exaggerated permissiveness, adaptation to maturational level. Feeding— degree of variety and quantity of food, coerciveness or permissiveness, rigidity of routine, meeting of child's hunger needs.

4. Relation of maternal conduct to culture patterns of child rearing and maternal role

(Rate: rigid or non-compliance—realistic compliance)

Indicators: Degree of deviancy or conformity to culture patterns, agreement between family aspiration and culture.

5. Maternal conduct measured against conscious ideals for conduct

(Rate: inability to carry out concepts—ability)

Indicators: Degree of anxiety re discrepancy between conduct and concepts re: behavior of child, satisfaction of child's needs, social discipline, punishment-reward system, social conformity, child centeredness of home, image of child.

6. Influence of child's response on conduct (Rate: no modification of conduct to meet child's need—modification)

Indicators: Degree to which mother shifts conduct, anxiety and guilt, rigidity of standards, child's need to force mother to care for needs, child's demands for closer contact with mother, and mother's realistic submission to child's needs.

7. Influence of father on maternal conduct

(Rate: opposition to conduct—positive support)

Indicators: Degree of father's approval of child's behavior, father's submissiveness to mother, parental agreement on child rearing, division of responsibility in family for child.

8. Influence of family group patterns on conduct

(Rate: negative influence—positive influence)

Indicators: Degree of intactness and integration of group, satisfaction of needs of members, good rapport, unity, common goals and standards, isolation of family group, harmony or disharmony influenced by conflict and dominance-submission patterns.

II. *Child Adjustment* (response to socialization) Average of items equals degree of adequacy of adjustment.

A. Security and satisfaction in togetherness with mother

(Rate: love needs not met—love needs met)

Indicators: Degree of pleasure in physical contact with mother, pleasure in feeding, sleep, degree of real closeness.

B. Reaction to separation from mother

(Rate: inability to separate—ability to separate)

Indicators: Degree of rejection of mother, anxiety as seen in need to cling to or avoid mother physically.

C. Manipulation or control of mother

(Rate: need to control—little or no need)

Indicators: Degree of need to force mother to meet needs, aggressiveness, resistance, over-assertion or lack of assertion in order to control mother.

D. Self assertion (Rate: unsuccessful self-mastery—successful)

Indicators: Degree of mastery of environment, dependence or submission, need to control mother, need to rebel, ability to grow (natural maturation), ability to identify with parents and to socialize.

E. Overt response to social discipline (Rate on average of following: resistance—positive acceptance)

1. Social behavior

Indicators: Degree of ability to adapt to environment, inappropriate passivity or aggressiveness, hyperactivity, over-control, excessive crying, temper tantrums, need to control or punish mother, anxiety, spontaneity, maturity according to age level.

2. Rearing practices

a. Weaning

Indicators: Degree of compliance, need to cling to bottle, satisfaction of sucking needs, need to control or punish mother.

b. Feeding

Indicators: Degree of enjoyment of food, need to punish or control mother, degree of compliance, refusal of food or overeating, demands to be fed.

c. Toilet training

Indicators: Degree of compliance, self training or no training, need to control or punish mother as retention, refusal to be trained.

F. Child's problems in response to socialization (Rate: very severe—mild)

Indicators: Degree of intensity and number of problems, as ability to form relationships, withdrawal, aggression, retardation of development (speech, training, etc.), social skills as training, feeding responsibility; need to control or punish parents, sibling rivalry, spontaneity, dependence, fears.

SCORING

The scoring of category items in the schedule is based on a relative rating of items to a base of extremes in either direction. This is due to the impossibility of determining how much of a given item or what degree of its presence or absence is necessary for a hypothetically successful fulfillment of social roles and adjustment of the individual to his environment. What is known is that a minimum degree or almost no presence of required items consistently leads to poor social and emotional adjustment and failure to fulfill social role requirements adequately. At the other extreme, when there is sufficient presence of or success in these items, the adjustment of the individual is a positive one with concomitant success in his social roles. This does not imply ideal adjustment.

Scoring on a scale provides a rough index for purposes of comparison and summarization. Because of the selective character of the sample, a scale from 1 (low) to 5 (high) was used, rather than a simple dichotomy. The measures have not been sufficiently refined to be strictly independent and, in some instances, overlap. After each item in the schedule was rated for each case, a total score for each category was obtained by averaging the item scores. Items were considered to be equally weighted. The indicators were utilized as bases for judgments. When the categories were totaled and averaged, a single score was obtained for the "total mother person" and also for the child. Score values were determined as follows:

Score Value	*Definition*
1	Inadequate for adjustment.
2	Adequate for minimum adjustment.
3	Sufficient for somewhat better than minimum adjustment.
4	Adequate for somewhat less than reasonably good adjustment.
5	Adequate for reasonably good adjustment.

The scoring of the specific rearing practices is also on a relative basis in terms of the degree of adequacy in meeting the child's needs and is a measurement of observed behavior. Generally accepted pediatric and psychiatric concepts of adequacy were given high score values (1, 7). The degree of deviation from this in terms of timing and method used were the bases for lower score values. The following is a definition of score values on the rearing practices.

	Score Value	Definition
Feeding:		
	1	Neglect of child's hunger needs or forced feeding.
	2	Rigid or irrational overconcern of mother with regard to child's food intake.
	3	Some irrational concern but moderate ability to meet child's hunger needs.
	4	Ability to meet child's needs for most part, some occasional concern.
	5	Adequate satisfaction of child's hunger on basis of needs.
Weaning:		
	1	No weaning or abrupt weaning.
	2	Inconsistent training or coercion, very late (after 36 mos.) or very early (before 6 mos.).
	3	Self weaned (mother makes no attempt to wean), not sufficiently gradual.
	4	Less gradual than score value 5, etc.
	5	Gradual weaning between about 9 and 15 months.
Toilet Training:		
	1	Coercion or no training.
	2	Inconsistent training, exaggerated concern and discipline, very late training (after 24 mos.).
	3	Self trained (mother makes no attempt to train), milder forms of score value 2.
	4	Mild concern or inconsistency but gradual.
	5	Gradual training: Bowel 1 to 2 years; Urine 1½ to 2½ years.

The 25 cases were rated by the author. As a rough check, independent ratings were first made on six cases by two qualified persons. The result was an average of 87 per cent agreement on six cases between the three sets of ratings on mean scores for the categories. In no case did disagreement on item scores exceed one point on the scale. It was not possible at the time to secure independent ratings for all cases.

ANALYSIS OF THE DATA

As might have been anticipated by the selective quality of the sample, the large majority of subjects were characterized by a minimal level of adjustment. Table 1 shows that the large majority of cases in all categories, except the rearing practices, received mean scores lower than 3.0. On the basis of the schedule analysis, this indicates that most of the mothers were poorly

TABLE I

SUMMARY SCORES FOR THE 25 CASES

	FREQUENCY OF SCORES IN INTERVALS					*Mean*
Category	*0–1.0*	*1.1–2.0*	*2.1–3.0*	*3.1–4.0*	*4.1–5.0*	*Score*
Total Mother Person	4	16	3	2	0	1.6
Character Structure	8	12	3	2	0	1.6
Maternal Role	11	9	3	2	0	1.5
Maternal Conduct	1	18	4	2	0	1.8
Child Adjustment	1	10	11	3	0	2.1
Three Rearing Practices	1	0	11	8	5	3.1

adjusted women unable to fulfill the maternal role or meet the child's basic needs. Concomitantly, the child's adjustment was also poor. Measured on the specific rearing practices, however, the majority of mothers functioned in a reasonably adequate manner according to widely accepted standards.

For the character structure alone, the scores indicated poor adjustment and inability to meet maternal role requirements. More mothers scored low on the quality of their interpersonal relations in the maternal role than on any other item in the total schedule, indicating insufficient togetherness with the child and inadequate control of emotional urges, both necessary for adequate maternal functioning.

Scores on the third category for the "total mother person" are widely distributed with greater variation between items than found in the first two categories. The group as a whole were slightly more successful in their actual conduct than their character structure or ability to meet maternal role requirements implied. Slightly higher scores on family group patterns of interaction, influence of the child's response and the father indicate that, for the group as a whole, these factors operated to help the mother to be more effective in her maternal conduct than as an individual. The complete case records of the families of these mothers were re-examined and compared to the remaining sample. It was found that when maternal conduct was unexpectedly better than anticipated on the basis of the mother's character structure, one or more common factors were present. The father was the better adjusted of the two parents (judged by psychiatric interviews and projective tests), the parental and marital relationships were more stable and suffered from less interpersonal conflict than in the other families and the family group was less isolated from the community. Highest score values among items for the "total mother person" were obtained on the degree of realistic compliance to prevailing culture patterns of child rearing, indicating the relative absence of overt deviancy in this group.

The children's responses were more widely distributed on the scale. On the whole, these children had little security or satisfaction in emotional "togetherness" with their mothers and needed to manipulate and control in an attempt to satisfy basic needs. Unlike the other two variables, the scores for the rearing practices show absence of clustering on the scale, with the majority of the cases at the three higher score levels.

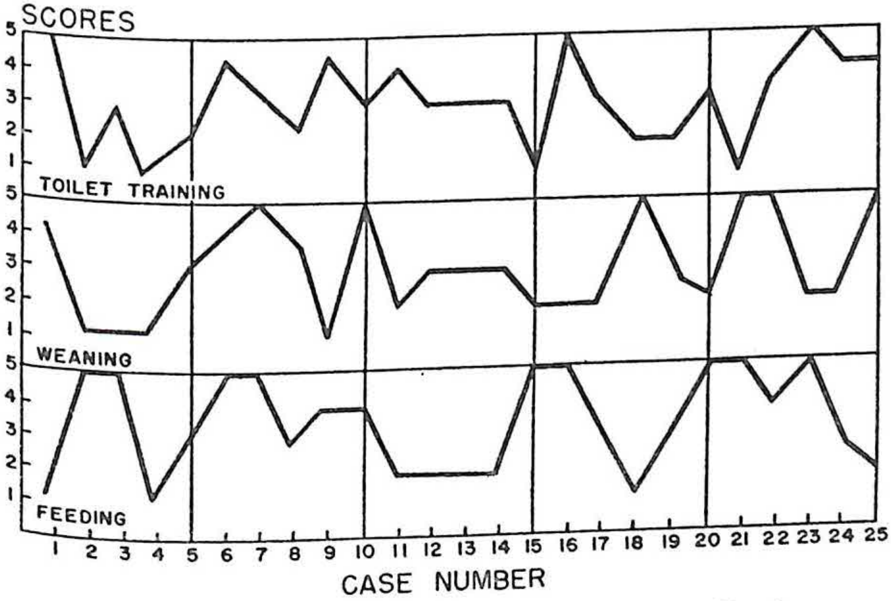

FIGURE 1—Maternal Conduct in Three Child Rearing Practices.

Figure 1 shows that there are wide differentials in the rearing practices between cases and between the variables for the same case. The lack of consistency between the three rearing practices is apparent. Frequently the mother conducts herself adequately on one or two items but fails completely on the third. The evidence, in most cases, is that the mother did not adopt the same patterns of behavior in the three areas of training. Examination of the original data in the case records shows that such diversity in the mother can be traced to her underlying emotional needs which she expressed in an appropriate area of social discipline. In most instances, the child's response in terms of overt compliance or resistance to the rearing practices does not seem to relate either to the specific techniques used or to his total response to the "total mother person." In most cases, there is a complete lack of consistency of response in the three areas of social discipline analyzed.

The close relatedness of the mean scores of child adjustment and adjustment of the "total mother person" is illustrated in Figure 2. The rearing

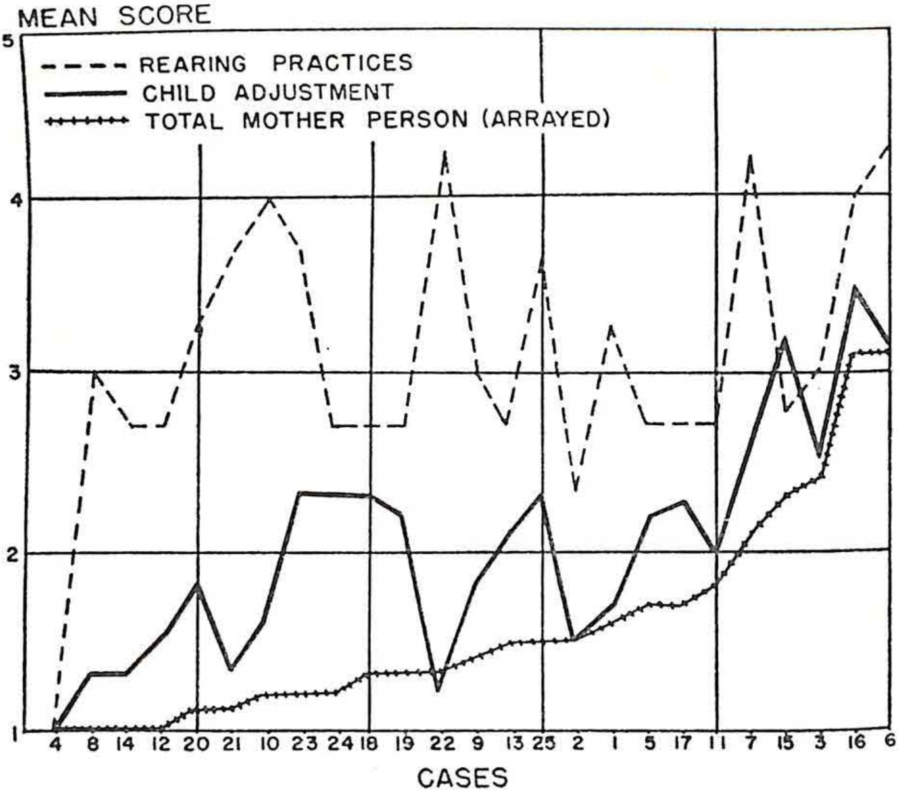

FIGURE 2—Mean Scores of the "Total Mother Person," Child Adjustment and Rearing Practices for Each Case.

practices, however, do not follow this curve and, with the exception of one case, vary without apparent relationship to the other two variables.

In Table 2 are the coefficients of rank correlation which support the hypotheses tested. Of principal interest here are the highly significant correlations of the "total mother person" and its principal determinant, her character structure, with the child's adjustment. The ability to integrate character traits into the maternal role and maternal conduct are also significantly correlated with character structure (correlation coefficients of +.82 and +.85 respectively) and are therefore dependent on this more or less fixed component of the "total mother person."

On the other hand, there is an absence of correlation between the three rearing practices analyzed separately and the child's adjustment, indicating that the child's response is primarily the result of his total interaction with his mother as she fulfills the maternal role and her conduct in that role. This response, therefore, is basically dependent on the mother's character structure.

TABLE 2

COEFFICIENTS OF RANK CORRELATION BETWEEN TOTAL MOTHER PERSON AND ITS COMPONENTS AND CHILD ADJUSTMENT ($N = 25$)

	Child Adjustment
Total Mother Person	.75**
Character Structure	.80**
Maternal Role	.69**
Maternal Conduct	.93**

** Significant at .01 level.

SUMMARY

The results of this interdisciplinary study of 25 mothers and their first child of preschool age appear to support the hypotheses tested. The child's adjustment to socialization was significantly related to the "total mother person" and specifically to her character structure, but insignificantly related to the mother's specific rearing techniques, where the mother's conduct showed wide variation and inconsistency. This was traced to her own emotional needs and conflicts.

In the mother's social interaction with the child as she takes on the maternal role, she both consciously and unconsciously expresses her emotional needs and attempts to satisfy them. Her integration into the maternal role will depend on her perception of self and role and will influence the child's perception of her. It is also evident that the child is both sensitive and responsive to the unconscious attitudes of the mother as well as to her overt conduct. The quality of his adjustment is more dependent on his total interaction with his mother than on any specific aspects of social discipline.

This research points to the mother's character structure as an important causative factor in the wide variation in both child rearing and child adjustment within a cultural subgroup of our society. It is generally evident that increased insights may be obtained by a systematic investigation of socialization utilizing an interdisciplinary approach. In the areas of family study, preventive mental health and child guidance, rigorous analysis of social roles and social interaction on several levels, as suggested by this study, would provide a sounder basis for understanding the dynamics involved in socialization, for treatment and for prediction.

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THE ROLE OF MEMBER IN CLUBS OF LOWER-CLASS AND MIDDLE-CLASS ADOLESCENTS[1]

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Is the type of role-adaptation adolescents make as members of formally organized groups related to their social class affiliation? Specifically, is the role of member fulfilled in different ways in neighborhood center teenage clubs in the slums and in middle-class areas? In the sizeable body of empirical studies on children's group behavior and on social class influences upon adolescent life, one finds few generalizations that bear directly upon this problem.

In their informal associations with peers, adolescents value certain behaviors and attributes that vary with social class membership (6, 14, 16). In addition to peer culture mores, however, role-adaptation in teen-age clubs is theoretically dependent upon the formal structure of such groups, including a president or chairman, members who are clearly so designated, and an adult leader whom the neighborhood center assigns to foster youth's practice in democratic decision-making and for other purposes. Slum area street gangs, which may be in their own way as clearly structured as the neighborhood center clubs, have been vividly described by Thrasher (17), Whyte (19), and others, but comparable accounts on middle-class neighborhood youth groups are lacking, and none of these groups, of course, has a responsible adult regularly in attendance. Membership in formally organized groups and other components in the social participation patterns of middle- and lower-class youth have been studied (12, 13), but research on role-adaptation *within* such groups has failed to utilize social class as an independent variable. Instead, when the social class concept has been used, it has been for purposes of experimental control, as for example in Lippitt's

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[1] The writer is indebted to the following persons who were members of the year's graduate seminar in which this study was executed: Robert T. Blazejack, Evelio Grillo, Robert J. Hagest, Margie B. Herman, Genevieve C. Hoffman, Donald Z. Miller, Charles O'Shea, Irving M. Piliavin, Joseph H. Solis, Memya Thoren, and William B. Ward. The study was done as a Group Research Master's Project at the School of Social Welfare, University of California, Berkeley, under the writer's faculty supervision. The graduate students served as group observers and in many other roles in the course of the investigation.

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first laboratory study on children's groups (8).[2] Lacking systematic empirical inquiry, the relationship of social class status to role-adaptation in formally organized groups is open to such speculative generalization as: "The worker [working class] group tends to remain relatively unstructured—roles are ill-defined and quite fluid, preventing fruitful specialization and growth (2, p. 29)."

Drawing upon Davis' research on social class theory and adolescent development (3, 4), one might postulate that lower-class teenage club members express more aggression, engage more frequently in digressions from the central activity of a meeting, and are generally less collaborative as a total group during club meetings than are comparable middle-class club members. Prior research, in Chicago (1, 10, 11, 15), of which the current study is a continuation, reveals that this simple formulation does not stand up under testing. Rather, the prior research suggests that the roles of member, club president, and adult leader are quite differently perceived by slum area and middle-class neighborhood center adolescents. A proposition on role inferred from narrative records of club meetings and interviews with a cross-section of members, early in the Chicago research, seemed to be confirmed when all the data on twelve clubs were in. Since the current study aims to re-test, with more refined research techniques, certain parts of this formulation, its quotation here is appropriate:

> In the middle-class groups, pre- and early adolescents seem primarily directed toward working out relationships with peers. At home their proximate relationships with parents in joint activities—going places and doing things together—and the freedom to express verbally ther negative reactions, to gainsay parental requests, and to manipulate parents in ways that suggest their equal status and power with parents make relations with the adult adviser in youth group settings developmentally less significant. In the lower-class groups, however, the adult adviser becomes a more significant and conflictful person, someone in a sense who is supra-human—to be tried, or challenged more or less openly. Relations among peers in the lower-class groups are characterized by repeated obvious attempts at status seeking. . . . This pattern in the lower-class groups may be traced to the increasing distance lower-class boys and girls in growing up have attained from adults; earlier on their own (as Davis and others have shown), they seem to have gotten out of communication with adults. Physical aggression in their

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[2] Lippitt describes the children in both groups as though none came from lower-class families. "With one or two exceptions, equally true for both clubs, we may roughly generalize . . . [for all subjects] : (1) a home of good socio-economic status, few siblings, and consistently moderate discipline; (2) an unorganized neighborhood play life with no hint of gang membership; (3) rather inactive membership in a Club pack; and (4) membership in a progressively inclined university school system" (8, p. 65). With subjects of this type of background, one may question Lippitt's generalizing, albeit with caution, about behavior of "the authoritarian group members" and "the democratic group" (8, pp. 190-191). What might have happened had some lower-class children been included in each of these groups?

> homes, when parents are at home together with their pre- and early adolescent children, continues to assure them the adult is boss. Personal relationships are seen in a hierarchical framework, definitely non-equalitarian and non-collaborative, and the power struggle between adults and early adolescents carries over into the youth groups, with much hostility, overt, covert, and smothered (11, p. 12).

For the current study, the concept of role has been operationalized as having structural and functional properties. Structurally, the role of member is fulfilled in reciprocal relationships with the roles of adult leader, president, and other member. Functionally, each role may include behaviors that are primarily collaborative, in the process of democratic decision-making; hostilely aggressive, in the authoritarian tradition of might-is-right; or digressive, an asocial or anarchic mode of interaction. The psychological counterparts of these three modes of social process appear in Horney's statement that "a child can move *toward* people, *against* them or *away from* them (7, p. 42)." In a teenage club, these three modes of interaction can be directed by a member in any one of three structural directions: to the adult leader, president, or other member(s). The functional and structural properties of role seem adequately operationalized if every interaction is seen as having conjointly a mode and a direction.

If the role of member and its reciprocal roles are differentially perceived by lower-class and middle-class adolescents, the modes and directions of interaction that members initiate and receive should reflect this differential pattern. Members may sanction or taboo more or less interaction with the adult leader or the president. The mode of such interaction theoretically depends upon the perception of each role. "Toward" behavior or collaboration is assumed to imply respect or trust; as a group-integrative or centripetal mode of interaction that leads to the resolution of an issue, it includes the behaviors of suggesting, asking, yielding, approving, deciding, and the incorporating of oppositional or excluded persons. (See Figure 1.) "Against" behavior or hostile aggression implies distrust or threat and is manifest by compelling or forcing, resisting, and either verbal or non-verbal attack; interaction which aims to superordinate the initiator and subordinate the object of the interaction, such as compelling, is thus considered hostilely aggressive. "Away from" behavior or digression is group-disintegrative or centrifugal interaction in the process of movement away from threatening or disapproved others and/or central activity of the group at a given time; it may appear as subgrouping or fragmentation of members who engage in tangential "horse-play" or other non-group relevant interaction during discussion on the planning of future events. Collaboration, aggression, and digression are three modes of behavior that may be incorporated with greater or lesser frequency into the role of member in different groups and directed with greater or lesser frequency to the correlative roles of adult leader, club president, or other member.

Specifically, then, drawing upon what is known and postulated about lower-class and middle-class adolescent group life, the following hypotheses are proposed on the lower-class, as compared with the middle-class, club member:

Hypothesis 1: In lower-class groups, the member directs to the adult leader (a) more collaboration, (b) more aggression, and (c) more digression. The adult is developmentally "a more significant and conflictful person" for him (11, p. 12).

Hypothesis 2: In lower-class groups, the member directs to the president (a) less collaboration, (b) less aggression, and (c) less digression. More obvious in his status-seeking among peers (11, p. 12), the lower-class club member is likely either quickly to conform with or to ignore a president, depending on his true status in the peer society; whether high or low, he is not likely to be the focus of more frequent interactions than his counterpart in middle-class groups who may be either approved or disapproved, but in either case is seen as the occupant of a position that must be dealt with, may be widely aspired to, and seems essential to the achievement of club and neighborhood center goals. Such postulates are at least in line with Davis' concept of "social anxiety" among middle-class youth (3).

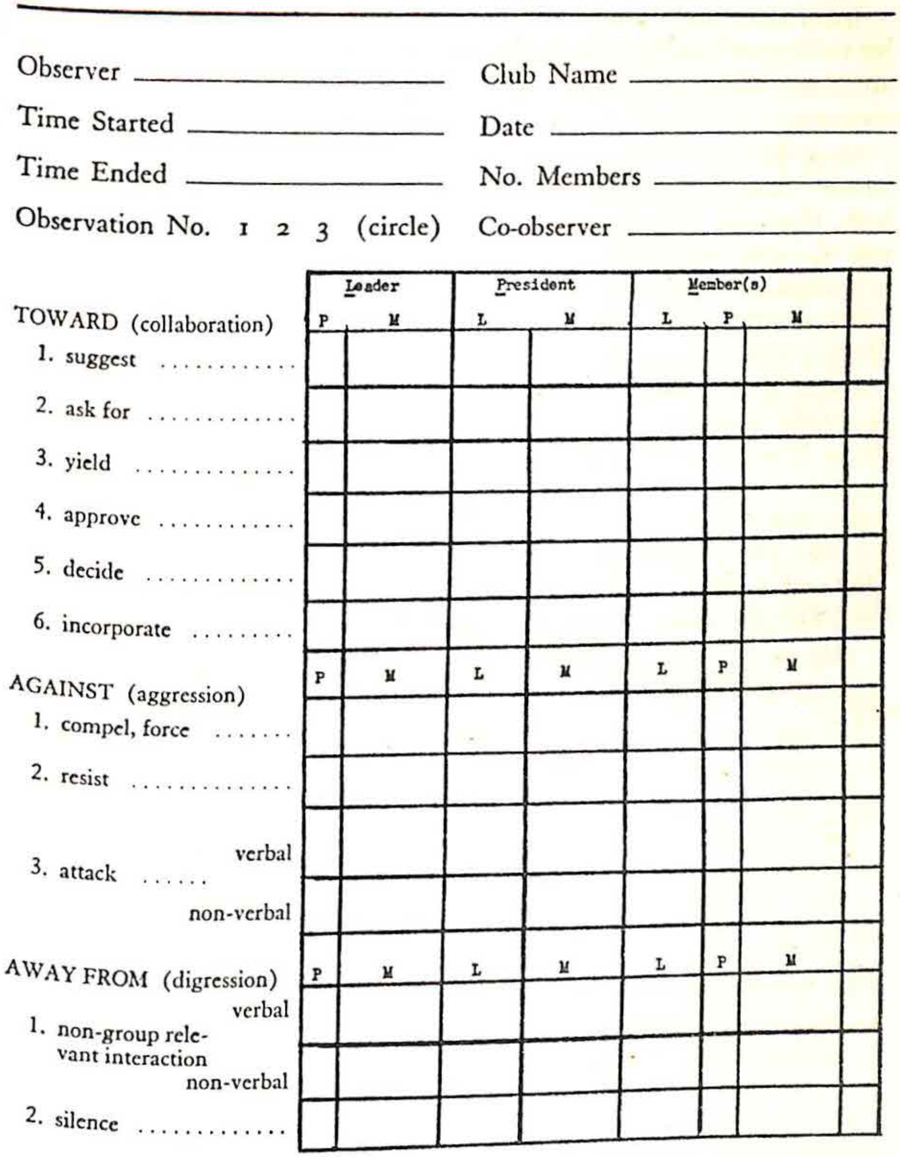
Hypothesis 3: In lower-class groups, the member directs to other members (a) less collaboration, (b) more aggression, and (c) more digression. This follows from the characteristically more overt expression of aggression and lesser degree of impulse control found among lower-class youth today (3).

Each of these hypotheses is the converse of a hypothesis on the role of member in middle-class adolescent clubs.

METHODS

To test the hypotheses, ten clubs averaging a total attendance of 126 adolescent members were selected and paired in the San Francisco Bay Area. An observational instrument (Figure 1) was developed and used in three successive mid-year meetings in each club.

For the selection of clubs, criteria which provide control of factors theoretically related to members' role-adaptation were set up, members' social class status being the independent variable. The criteria that could be met in the field are as follows: (a) all clubs have scheduled weekly meetings in a neighborhood center attracting primarily either slum area or middle-class adolescents; (b) all clubs have an agency-designated adult leader regularly in attendance; (c) all club meetings are presided over by an adolescent in the role of president; (d) all club meetings include a forum-type discussion for the members' planning of their own programs, thus excluding from this study all groups with highly ritualized procedures and agency-imposed programs as in some Scout troops; (e) all clubs are organ-



Observer ____________________ Club Name ____________________
Time Started ____________________ Date ____________________
Time Ended ____________________ No. Members ____________________
Observation No. 1 2 3 (circle) Co-observer ____________________

	Leader		President		Member(s)			
TOWARD (collaboration)	P	M	L	M	L	P	M	
1. suggest								
2. ask for								
3. yield								
4. approve								
5. decide								
6. incorporate								
AGAINST (aggression)	P	M	L	M	L	P	M	
1. compel, force								
2. resist								
3. attack verbal								
3. attack non-verbal								
AWAY FROM (digression)	P	M	L	M	L	P	M	
1. non-group relevant interaction verbal								
1. non-group relevant interaction non-verbal								
2. silence								

FIGURE 1—Observational tally-sheet used by observers for each six-minute observation period.

ized and meeting for a minimum of four months by the time that research observations begin, thus excluding from this study all very newly organized clubs still in the process of initial group formation and role-definition; and (f_1) all clubs are composed of either boys or girls, ages 12 to 16, with a median attendance of not fewer than 6 and not more than about 20 members, but (f_2) all clubs paired for co-observation are to be of the same sex, not more than about a year apart in median age of members, not too disparate in numbers attending, and each composed predominantly of lower-class or middle-class adolescents. These criteria are in certain ways a broadening of the initial theoretically-set controls, but limits had to be expanded in view of the clubs available for pairing in the 21 canvassed urban neighborhood centers. Matching of the adult leaders in paired clubs was considered a theoretically questionable and operationally infeasible procedure in this field investigation, if only because of evidence that the role of adult leader is more a function of the structure and process of the group than a direct correlate of any as yet isolated personal or ego-structure factor in the leader as an individual (9). Data on the leaders of the ten clubs, obtained after their selection, reveal that the adults working with the lower-class and the middle-class adolescents were roughly comparable as to prior experience as adult leader, educational level, and prior personal experience as member of a youth group.

Lower-class and middle-class clubs were paired, as shown in Table 1. Each pair of clubs was observed by the same team of two observers, thus reducing the possibility of ascribing observed differences to differences among observers. Both observers in each team were of the same sex as the members of the paired clubs they observed.

TABLE 1

AGE, SEX, ATTENDANCE, PARENTAL OCCUPATION, AND SOCIAL CLASS OF ADOLESCENT MEMBERS IIN TEN PAIRED CLUBS

Club	*Age Range* (years)	*Median Age*	*Sex*	*Median Attendance* ($N=126$)	*Median Parental Occupation**	*Social Class*
A	12–13	12.8	M	10	2	lower
B	11–13	12.5	M	6	6	middle
C	14–16	14.7	M	15	3	lower
D	12–14	13.5	M	18	6	middle
E	13–16	14.0	M	8	3	lower
F	13–14	13.5	M	21	7	middle
G	16–17	16.5	M	8	4	lower
H	14–17	15.7	M	12	7	middle
I	13–15	13.8	F	17	4	lower
J	12–13	12.6	F	11	7	middle
Lower class (mean)		14.4	—	11.6	3.2	—
Middle class (mean)		13.6	—	13.6	6.6	—

* See footnote 3 for rating scale.

Social class estimates of club members were made first by comparative evaluation of neighborhood (dwelling area) and then by occupational rating[3] of club members' parents, the latter rating for all clubs confirming the former estimates. While all the middle-class clubs were predominantly Caucasian and non-ethnic, clubs A, C, and I (see Table 1) were composed of Negroes, and clubs E and G met in a neighborhood center that served a large percentage of Italian ethnics.[4]

TABLE 2

RELIABILITY OF TALLY-SHEET OBSERVERS INDICATED BY RANK ORDER CORRELATIONS OF TYPE OF MODE AND DIRECTION OF INTERACTIONS

	Pre-test 1		Pre-test 2		Pre-test 3		
Observers	*Type of mode*	*Direction*	*Type of mode*	*Direction*	*Type of mode*	*Direction*	Mean
I – II	—*	.69	.84	.71	.68	.71	.73
I – IV	—*	.90	.64	.76	.74	.84	.78
II – IV	.74	.61	.37	.38	.82	.50	.57
III – V	.97	.88	.78	.88	.63	.90	.84
VI – VII	.94	.45	.92	.83	.70	.74	.76
VIII – IX	.97	.79	.73	.77	.86	.73	.81

* Coefficient not obtained because of error by Observer I in recording.

In each team of co-observers, one wrote a narrative record and one used the observational tally-sheet (Figure 1) to obtain three spaced six-minute observations in each of three successive meetings. (Data from the narrative records are not discussed in this report.) To obtain samples of early, middle, and later interactions in each meeting of each club, the first six-minute observation on a tally-sheet began five minutes after each meeting had begun; the second, twenty minutes after the beginning of each meeting; and the third, as close to the termination of each meeting as possible. In the development of the tally-sheet, its validity was judged non-quantitatively in pre-tests on club meetings role-played by members of the research group; pre-planned interaction patterns and narrative reports of these "clubs" in action were compared with the tally-sheet records. The reliability of an instrument like the tally-sheet is determined primarily by the reliability of its users. Rank order correlation of the thirteen types of interaction (horizontal items, Figure 1) and the seven direction totals (vertical items, Figure 1) revealed that all but two of the pre-test observers (II and IV) could use the tally-sheets with some degree of objectivity (Table 2). Observers I, III, V, VII, and IX were chosen to do the tally-sheet recording in the field; the others, and observer X, became the narrative report co-observers.

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[3] Ratings are based on a scale developed for the U.S. Bureau of the Census (20). Higher ratings are for proprietors, managers, and professionals, 8 or 7; sales and clerical workers, 6; and skilled craftsmen and foremen, 5. Lower ratings are for semi-skilled and unskilled workers: operatives, 4; household and service workers, 3; laborers, 2; and relief recipients, 1.

[4] Minority group ethnicity is a factor in urban lower-class culture that Warner has built into his social class theory (18, pp. 118-140) and that Davis and Havighurst have found for Negroes and Caucasians in no way obfuscates social class differences in child-rearing (5).

TABLE 3

FREQUENCY BY MODE AND DIRECTION OF INTERACTIONS INITIATED BY MEMBERS IN LOWER-CLASS AND MIDDLE-CLASS CLUBS

Direction	*Mode*	*Lower class*	*Middle class*	*Total*	*Chi-square value*
To Adult Leader:					
	Collaboration	94	64	158	5.70*
	Aggression	44	31	75	2.25
	Digression	10	10	20	...
To Club President:					
	Collaboration	50	85	135	9.07†
	Aggression	18	42	60	9.60†
	Digression	5	5	10	...
To Other Members(s):					
	Collaboration	208	240	448	2.29
	Aggression	84	55	139	6.05*
	Digression	270	243	513	1.42
TOTAL		783	775	1558	36.38‡

Significant at: * .02 level † .01 level ‡ .001 level

FINDINGS AND CONCLUSIONS

The role of member is differently fulfilled and apparently differently perceived by the lower- and the middle-class adolescents, as may be seen in Tables 3 and 4.

Hypothesis 1: The lower-class adolescent club member directs more collaborative interactions to the adult leader than does the middle- class member (Table 3). The data do not support parts (b) and (c) of this hypothesis in regard to more aggression and digression directed to the adult leader in slum area groups. It should be noted that the adult leader reciprocally directs more collaborative interactions to lower-class than to middle-class members (Table 4).

Hypothesis 2: The middle-class adolescent club member directs more collaborative and more aggressive interactions to the president (Table 3). The data do not support part (c) of this hypothesis on digressive interactions. The president, in turn, is more collaborative and aggressive with members in middle-class than in lower-class groups (Table 4).

Hypothesis 3: The lower-class adolescent club member is more aggressive with other members (Table 3). The data do not support part (a) of this hypothesis on less collaboration among lower-class adolescents. There is some slight evidence (Table 4, at the .10 level of confidence) that there is more member-member digression in the lower-class clubs.

TABLE 4

FREQUENCY BY MODE AND DIRECTION OF INTERACTIONS RECEIVED BY MEMBERS IN LOWER-CLASS AND MIDDLE-CLASS CLUBS

Direction	*Mode*	*Lower class*	*Middle class*	*Total*	*Chi-square value*
From Adult Leader:					
	Collaboration	249	164	413	21.40‡
	Aggression	49	51	100	...
	Digression	7	12	19	1.12
From Club President:					
	Collaboration	135	221	356	17.10‡
	Aggression	48	112	160	23.10‡
	Digression	10	20	30	2.94**
From Other Member(s):					
	Collaboration	208	240	448	0.57
	Aggression	84	55	139	7.30†
	Digression	270	243	513	2.70**
TOTAL		1060	1118	2178	76.23‡

Significant at: ** .10 level † .01 level ‡ .001 level

The data validate only parts of the initial proposition. The over-all pattern of quantitative findings is largely, however, in the expected directions. The initial formulation may thus be refined in the following ways:

1. The role of member among lower-class adolescents in neighborhood center clubs is fulfilled in a relationship to the adult leader that is comparable to the relationship the middle-class adolescent member has with his peer in the role of club president. In slum area clubs, the adult leader would seem to be a more significant figure to members than in middle-class neighborhood centers where adolescent members ostensibly have less need for interaction with the adult.

2. The role of member among middle-class adolescents apparently sanctions less aggression and digression in member-to-member interactions than does the comparable role among lower-class adolescents. This much squares with existing social class theory. It should be noted, however, that the total amount of aggression expressed by members in the two types of group is not significantly different, since the club president in the middle-class groups is the target (and initiator) of significantly more aggressive interactions than is his counterpart in the lower-class groups. One must conclude, therefore, that the role of member among both lower- and middle-class adolescents offers equal opportunity but different directional outlets for the expression of aggression in teenage clubs.

3. Differences found between lower-class and middle-class adolescents in the role of member and its relationships with the reciprocal roles of adult leader and club president may be explained in terms of differential cultural training and experience relevant to role-adaptation in formally organized groups. The initial proposition on differences in adolescent-adult and peer relationships in lower-class and middle-class child life is not invalidated by the findings of this study.

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EFFECTS OF TRAINING ON THE SRA PRIMARY MENTAL ABILITIES (PRIMARY) AND THE WISC[1]

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There is at the present time a growth in number of various training programs for kindergarten children. These usually involve the use of some type of paper-and-pencil work-book. The programs are primarily designed "better to prepare" the child for his forthcoming academic experiences such as reading and arithmetic or to increase his intelligence, presumably as operationally defined by his responses to certain test stimuli and the conditions under which these responses are evoked. The present study is an attempt to appraise critically the effectiveness of one of these training programs.

The particular training program selected for study was one constructed by Thelma Gwinn Thurstone entitled *Learning to Think Series—The Red Book* (2). Certain statements in the teacher's manual (1) for the training program prompted the following four general non-statistical hypotheses. It was the purpose of this study to attempt to test these hypotheses using the SRA Primary Mental Abilities-Primary (3) (PMA) and the WISC (5) as separate criterion scores.

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[2] The writer is now associated with the Department of Child Development and Family Relationships and the Agricultural Experiment Station at the University of Tennessee.

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Hypothesis 1—The administration of the training program to kindergarten children will result in a statistically significant mean gain in the Total IQ's as obtained by the PMA.

Hypothesis 2—The experimental subjects (*S*s) initially higher in mean PMA Total IQ will show significantly greater mean gains than those initially lower.

Hypothesis 3—The administration of the training program to kindergarten children will result in a statistically significant mean gain in the Full Scale IQ's as obtained by the WISC.

Hypothesis 4—The experimental *S*s initially higher in mean WISC Full Scale IQ will show significantly greater mean gains than those initially lower.

METHOD

Training Materials

The training materials consisted of three main parts: (*a*) the teacher's manual, (*b*) group lesson charts, and (*c*) *The Red Book*. The latter was made up of 66 pictorial exercises each one of which centered around one or more of the various PMA factors. The group lesson charts were displayed to the group to demonstrate procedure in solving the various exercises. Lastly, the teacher's manual was principally concerned with exercise administration.

Subjects

The 107 *S*s included in this study were members of four separate public school kindergarten groups in Iowa City, Iowa. The four groups as a unit consisted of 50 females and 57 males, the overall mean CA being five years, six months (5-6) with a range of 5-0 to 5-11. The CA's were computed from the date of the first test received by the child whether it was the PMA or WISC.

Only those *S*s were used for whom both pre-training tests and post-training tests (hereafter, *pretest* and *posttest* respectively) afforded computation of the PMA Total and WISC Full Scale IQ's. Seventeen of an original 124 *S*s were eliminated from final analyses because of failure to meet this criterion which resulted in a total sample of 107 *S*s. Absences, nonrapport, and administrative errors were the principal reasons for incomplete records.

Experimental Design

A *2 x 2* factorial-type design was employed using intact classes as shown in Table 1. One of the two factors was classified as *treatment* which included experimental and control groups. The other factor, classified as *IQ level*, was composed of two parts, namely, an upper and a lower level

TABLE I

FACTOR DESIGNATION AND NUMBER OF CASES FOR EACH OF FOUR GROUPS CONSTITUTING THE 2 x 2 FACTORIAL DESIGN TOGETHER WITH THE ASSIGNMENT OF THE TWO TEACHERS

Group	*IQ Level*	*Treatment*	*Teacher*	*N**
E_1	1	Experimental	1	28
C_1	1	Control	1	31
E_2	2	Experimental	2	25
C_2	2	Control	2	23

NOTE—The group designations in column 1, from the first to the last row, are to be read as follows: Experimental group, IQ Level 1; Control group, IQ Level 1; and so on, through IQ Level 2. The subscripts may also signify teachers. These symbols appear throughout the remainder of the report.

* Corrections for disproportionate cell numbers were used in the analysis.

(or Levels 1 and 2 respectively). The relative magnitudes of the PMA and WISC pretest mean IQ's constituted the criteria upon which the IQ levels distinction was made. These means are recorded in Table 2, Column 2, where it may be observed that in the case of the PMA, Groups E_1 and C_1 had means which were fairly high and relatively close, and that the means for Groups E_2 and C_2 were fairly close to one another but somewhat lower than those for E_1 and C_1. The same condition held true for the WISC pretest means, although the levels were separated by lesser IQ margins when compared to the PMA means. It may be added that Groups E_1 and C_1 arose from a generally *high* socio-economic population, and that Groups E_2 and C_2 arose from a generally *low* socio-economic population.

The use of experimental and control treatments was designed to provide a basis for testing Hypotheses 1 and 3. Similarly, the use of two IQ levels was designed to provide a basis for testing Hypotheses 2 and 4. In the case of testing the latter hypotheses, the *E* also planned to obtain additional information by computing Pearson *r*'s between pretest IQ's and IQ gains from pre- to posttests within the experimental groups.

The criterion scores used for the analyses of variance were the IQ *differences* (or gains) between the pre- and posttest results within each of the four groups for both the PMA and WISC separately. The analyses of both fourfold tables involved the same *S*s.

Experimental Procedure

The pre- and posttests were administered by a staff of research assistants from the Iowa Child Welfare Research Station. The staff underwent a one-month inservice training period concerned with test administration and scoring prior to testing *S*s used in the present study. Two kindergarten groups, exclusive of the research groups, served as staff training *S*s.

All research *S*s were tested in their respective school buildings. None of the examiners was familiar with any *S* before testing. The pretests required a period of approximately six weeks to administer in the Fall of 1950. The posttests required about seven weeks to administer in the Spring of 1951. The WISC was administered individually to each subject,[3] whereas the PMA was given in two separate sessions to small groups containing approximately five *S*s each.

Although not possible in the *pre*testing program, examiner's personal schedules in the *post*testing program permitted: (*a*) control of test order such that approximately half the *S*s were assigned at random to one of the two combinations (PMA-WISC and WISC-PMA) within each group; (*b*) each PMA and/or WISC examiner to test an approximately equal number of *S*s in each group respectively; and (*c*) the random assignment of the given number of *S*s to each examiner. In general, *S*s were necessarily tested at the examiner's convenience during the *pre*test program. In certain instances, given pretest examiners did almost all the testing in a given school.

In conclusion, certain changes and additions were made with respect to both sets of test data in those instances where scoring and administrative criteria were indefinite. The changes and additions were accomplished through the generous assistance of the test authors and members of the project staff. Graphic extrapolation of some PMA scores was also made because of limited norms. A full description of the above operations may be obtained from the author or the original dissertation.

Training Program

The teachers participated in instructional periods at the Research Station concerning the use of the materials during the month prior to the onset of the training program. The program was administered to the two experimental groups during a 14-week period between the pre- and posttests in strict compliance with the suggested teaching procedures for the lessons in *The Red Book*. All experimental *S*s received the complete set of exercises, absences being accounted for by special makeup sessions.

RESULTS

Table 2 includes the basic test results and components used to make the tests of significance. Two factorial-type analyses of variance were made of the pre- to posttest IQ *gains* (criterion scores) for both the PMA and WISC separately. The quadrantal table cell means and *SD*s of the gain distributions used in the PMA analysis of variance are given in the first four rows,

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[3] Digit Span and Mazes were not administered as a part of the WISC.

TABLE 2

PMA AND WISC PRE- AND POSTTEST MEAN AND MEAN GAIN IQ'S WITH THEIR *SD*'S FOR EACH OF FOUR GROUPS

	Pretest		Posttest			
Group	*Mean*	*SD*	*Mean*	*SD*	*Mean Gain*	*SD of Gains*
			PMA			
E_1	109.57	16.51	121.89	13.85	12.32**	10.58
C_1	109.13	13.65	114.23	13.52	5.10*	9.80
E_2	87.88	13.38	101.20	15.28	13.32**	7.21
C_2	97.26	22.39	100.30	17.44	3.04	12.06
			WISC			
E_1	105.46	13.83	113.50	13.48	8.04**	8.52
C_1	101.48	9.05	108.94	10.44	7.45**	9.04
E_2	88.04	11.62	96.96	11.81	8.92**	7.67
C_2	94.57	16.19	104.13	16.98	9.57**	5.54

NOTE—See Table 5 for the corresponding significance ratios of the mean IQ gains.

* $p < .05$.

** $p < .01$.

Columns 6 and 7, of Table 2. Those used in the WISC analysis of variance are given in the lower four rows of the same columns.[4] Use of this design requires that groups be assigned at random to treatments within levels. Strictly speaking, this assumption was not met, since it was decided that a better estimate of training effects on children initially higher in PMA IQ versus those initially lower would obtain if the group having the higher pretest PMA mean in Level 1 (Group E_1) and the group having the lower PMA pretest mean in Level 2 (Group E_2) were used as experimental groups. This procedure was applied.

With respect to the other assumptions which underlie the use of this design, inspection of the PMA and WISC gain distributions suggested no reason to doubt the assumption of normality. Bartlett's method for testing the hypothesis of homogeneous cell population variance was computed for the PMA and WISC. Both chi-squares were nonsignificant, being between p values of .10 and .20.

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[4] The statistical significance of each of these *individual group* mean IQ gains is reported at this point to avoid repetition later in text. Discussion of the rationale and procedures used in making these tests occurs subsequently in the results section. The analyses of variance now being described do not require information pertaining to the significance status of the individual group mean IQ gains even though the means are used in the *2 x 2* analyses of variance tables.

TABLE 3

SUMMARY TABLE OF THE $2 x 2$ FACTORIAL ANALYSIS OF VARIANCE OF THE PRE- TO POSTTEST TOTAL IQ GAINS

Source of Variation	*df*	*ss*	*F*
Training (T)	1	1971.00	18.88**
IQ Levels (L)	1	42.86	< 1.00
Interaction ($T x L$)	1	61.82	< 1.00
Within Cells (W)	103	10755.22	
Total	106	12788.64 †	

† The *ss* of Total is not the sum of the *ss*'s in the same column because of the changes made in the *ss*'s of T, L, and $T x L$ as a result of correcting for disproportionate cell numbers.

** $p < .01$.

A summary of the PMA analysis of variance is presented in Table 3. The within cells mean square (ms_W) was used as the error term for the T, L, and $T x L$ effects. The only significant F ratio was that for the T category. The summary table for the WISC analysis (computed as in the case of the PMA) is not given, since all F ratios were less than unity, and therefore nonsignificant.

The tests of the main T effects for the PMA and WISC were relevant to Hypotheses 1 and 3 respectively. Similarly, the tests of the main L effects for the PMA and WISC pertained to Hypotheses 2 and 4 respectively. Since the tests of the main L effects were by no means unequivocal, Pearson r's were computed between pretest IQ's and IQ gains within the experimental groups for both the PMA and WISC. The r's are presented in Table 4. The only r among these which was significantly different from zero was the one obtained for PMA Group E_1.

Aside from testing the four major hypotheses, other tests of significance were performed which dealt with overall mean gains and individual group

TABLE 4

CORRELATIONS BETWEEN PRETEST IQ'S AND IQ GAINS WITHIN EACH EXPERIMENTAL GROUP FOR THE PMA AND WISC SEPARATELY

Group	*N*	*PMA*	*WISC*
E_1	28	—.55**	—.35
E_2	25	.01	—.30

NOTE—A test of the null hypothesis was made in each case where $df = N - 2$.

** $p < .01$.

mean gains. With respect to the former, a test of the null hypothesis was made in the case of the overall mean IQ gain of all *Ss* on the PMA and WISC separately. In each instance the overall mean gain was obtained from a pooled sample ($N = 107$) of the individual *S* gains. Then for a given distribution (PMA or WISC), a *t* test for related measures was computed. The variance estimate used in the given *t* test error term was the *ms* for "Total" which was obtained from the corresponding analysis of variance made earlier. The overall mean gains on the PMA and WISC were 9.47 and 8.40 IQ points respectively. Both means were significantly different from zero as recorded in the last row of Table 5.

TABLE 5

PMA AND WISC SIGNIFICANCE RATIOS OF THE OVERALL AND INDIVIDUAL GROUP MEAN IQ GAINS FROM THE PRE- TO POSTTEST PERIODS

Group	$df = N - 1$	*PMA*	*WISC*
E_1	27	6.25**	5.15**
C_1	30	2.73*	5.03**
E_2	24	6.37**	5.41**
C_2	22	1.39	5.56**
Overall	106	7.92**	10.77**

* $p < .05$.
** $p < .01$.

The significance of the difference between the mean gain for each group and zero was also tested by use of the *t* test for related measures. The group mean gains for both PMA and WISC were involved. The appropriate ms_W from the analyses of variance was used as the variance estimate in the various *t* tests. The selection of this variance estimate was based on the retention of the hypothesis for homogeneity of variance for the four group gain distributions on both intelligence tests. The mean gains for the individual groups for both PMA and WISC (numerators of the *t* tests) are given in Table 2, Column 6. Those values which were found to be statistically significant are designated there. Table 5 contains the significance *ratios* computed for both the overall and individual group mean gains.

DISCUSSION

Hypotheses 1 and 3 stated essentially that the experimental *Ss* would show significant mean gains on the PMA and WISC respectively as a function of training. The rejection of the null hypothesis with respect to the criterion means of the main PMA T effects appeared to lend substantial support to the tenability of Hypothesis 1. On the other hand, the retention of the null hypothesis with respect to the criterion means of the main WISC T effects offered no noteworthy evidence as to the tenability of Hypothesis 3. These results might be accounted for by the fact that the PMA test items were strikingly similar to the items contained in the exercises of the training program. There appeared to be a marked dissimilarity between the training program items and those contained in the WISC which might have been related to the nonsignificant T effects obtained in the WISC analysis of variance.

It was interesting to note that in the instances of both the PMA and WISC, the overall mean gains were significantly different from zero, and furthermore, the same may be said about the mean gains within each school group with the exception of PMA Group C_2. The fact that some of the control groups showed significant gains[5] tended to uphold the general thesis that significant changes in scores on intelligence tests do occur. Under the present experimental conditions, however, one cannot definitely state the variables responsible for the changes in the control groups.

Hypotheses 2 and 4 stated that the experimental *S*s initially higher in mean IQ would show significantly greater mean gains than those initially lower on the PMA and WISC respectively. The nonsignificance of both the PMA and WISC main L effects indicated that the obtained data were insufficient to justify the rejection or acceptance of either Hypothesis 2 or 4. The correlations between initial IQ and gains within each of the experimental groups for both tests afforded a better means for an attempted solution to the problem. Implicit in Hypotheses 2 and 4 was the prediction that such correlations would be positive and significantly different from zero. Inspection of the r's obtained for the experimental groups presented in Table 4 definitely favored the rejection of Hypotheses 2 and 4, since all were either negative or near zero. Certainly there was no evidence to support the hypotheses. The correlational findings suggested an alternate hypothesis that perhaps the relationship between initial IQ standing and IQ gain is zero or negative.

The basic schema of the experimental design and its administration permitted the possibility that variation other than training might have in some systematic way affected the magnitudes of the criterion scores. With respect to the basic schema, inspection of Table 1 shows that groups were confounded with treatments and also with levels, since each cell contained a different group. The same table shows that teachers were confounded with levels but counterbalanced for treatments. The unfeasibility of completely controlling factors such as these constituted the major limitation of the research.

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[5] The mean gain shown by Group C_2 in the WISC category was greater than for either of the experimental groups in the same category (see Table 2).

In regard to administration of the experimental design, it was indicated in the main text that circumstances precluded the possibility of achieving optimum conditions of, (*a*) test order and (*b*) examiner-to-subject and examiner-to-group testing assignment, in the *pre*testing program. However, this was not the case in the posttesting program.

Procedural steps were taken wherever practical to minimize the possible systematic effects of the factors mentioned above. The ways in which these factors were handled have been discussed in the experimental procedure section. The effects of these variables, if any, could not be obtained from the data. However, as a method of acquiring some evidence with respect to examiner differences, two analyses of variance were performed with the *post*test data—one for the PMA and the other for the WISC. The respective analyses were applied in each case to a two-way classification table, namely, *examiners x groups*. In both instances, the null hypothesis of no examiner differences was retained as were the two interaction ratios, where p was greater than .05 for all four F tests. These results provided valuable information in the sense that there was no explicit evidence to suggest that examiner differences had any systematic effect on the *post*test scores. One could not, however, justifiably make the same inference in the case of the *pre*test scores. Whether or not possible examiner differences exerted a systematic influence on the pretest scores is a matter of empirical fact which could not be determined from the test results.

Since it was possible that extraneous variables affected the criterion scores even though various ways of controlling most of them were applied, and since the assumption of the random assignment of groups to treatments within levels was not strictly met, an interpreter is bound by the principles of sound statistical inference and logic to be conservative in making generalizations from the obtained results. It is with these facts in mind that the following conclusions were formulated.

SUMMARY AND CONCLUSIONS

The purpose of this experiment was to test four hypotheses suggested by Thelma Gwinn Thurstone's kindergarten training program—*The Red Book*. Hypothesis 1 stated essentially that kindergarten *S*s who received the training program would show statistically significant mean Total IQ gains as obtained by the SRA Primary Mental Abilities-Primary (PMA). Hypothesis 2 stated that experimental *S*s initially higher in mean PMA Total IQ would show significantly greater mean gains than those initially lower. The same hypotheses (3 and 4 respectively) were made with regard to the Full Scale IQ as obtained by the WISC.

The 107 *S*s (57 females and 50 males) included in this study were enrolled in the kindergarten groups of each of four public schools in Iowa City, Iowa. The mean CA was five years, six months. A $2 x 2$ factorial experimental design was employed to test the hypotheses where the criterion scores were the pre- to posttraining IQ gains. Each cell of the fourfold table in question contained a different group. Analyses of variance were computed for the PMA and WISC gains separately. In each of these tables, the significance of the differences between the mean IQ gains for the control and experimental groups (treatment classification of the design) determined the final point of view adopted concerning the acceptability of either Hypothesis 1 or 3, as the case might be. *Low* and *high* IQ levels constituted the other classification of the factorial design, and they were differentiated and defined on the basis of the pretest IQ's. Then for a given table (PMA or WISC) the significance of the differences between the mean IQ gains for the low versus the high level was relevant, but not decisive, to the testing of Hypothesis 2 or 4, as the case might be. More germane to the testing of Hypotheses 2 and 4 were the correlations computed between initial IQ standing and IQ gains within each experimental group for both the PMA and WISC.

For each of the two fourfold tables of IQ gains, a statistical test was made to determine whether or not the overall (grand) mean differed significantly from zero. The same hypothesis was tested with respect to each of the cell (individual group) means in both analysis of variance tables.

The major limitation of the experiment was the unfeasibility of controlling completely for the possible effects of such factors as group differences associated with schools, examiner differences, teacher differences, and test order. However, steps were taken to minimize the possible effects of these factors. Whether or not such potential sources of variation affected the criterion scores systematically and significantly could not be determined from the data.

The following were the results obtained and conclusions made with respect to each of the four hypotheses and other relevant material. Where conclusions were founded upon statistical tests of significance, a coefficient of risk of $p = .05$, adopted prior to the experiment, was used.

1. From the PMA analysis of variance, it was found that the means of the IQ gains for the experimental treatment groups were significantly higher than the corresponding control groups who did not receive the training, thereby supporting Hypothesis 1.

2. The WISC analysis of variance yielded no statistically significant results, thereby precluding any judgment with respect to the confirmation or rejection of Hypothesis 3.

3. The r's between pretest IQ standing and IQ gains within each experimental group were .01 and —.55 for the PMA, and —.30 and —.35 for the WISC. Thus, all were either negative or near zero, thereby casting considerable doubt on the tenability of Hypotheses 2 and 4. These findings suggested the alternate hypothesis that the relationship may be negative or zero where either intelligence test is used.

4. In the case of each intelligence test, the total sample ($N = 107$) gained significantly in mean IQ from the pre- to posttests. The PMA mean gain was 9.47 points, while the gains on the WISC produced a mean of 8.40.

5. The IQ gains from the pre- to posttests were statistically significant on both the PMA and WISC for each individual group, with the exception of one PMA control.

6. Results (4) and (5) appeared to uphold the general thesis that intelligence test scores do change significantly. However, it was not possible to specify definitely the factors determining the significant changes.

7. To the writer, the only significant meaning that may be associated with increases in the scores of the two tests, or any other such "intelligence" test, is the relationship between the gains and other operationally defined variables such as arithmetic or reading performance. The present study dealt only with questions concerning gains in IQ.

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THE STATISTICS OF THE INDIVIDUAL CHILD: THE USE OF ANALYSIS OF VARIANCE WITH CHILD DEVELOPMENT DATA[1]

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A number of methods have been devised to analyze the pattern of child development data, and these methods, to a certain extent, have lacked simplicity and precision. Without going into detail, it can be said that, as far as the data of the individual child are concerned, the methods are mainly graphical. Seriatim measurements of individuals' growth—in height, weight, intelligence, etc.—are expressed as the mean chronological age at which they appear in the standard population. These are called "growth ages" and are plotted against the individuals' own chronological ages (9). From an "age-unit" graph constructed in this manner the researcher is able to judge more or less subjectively whether a child's growth pattern is homogeneous (displaying a relative lack of dispersion among all the plotted growth ages) or heterogeneous (showing a relatively high degree of dispersion among the plotted growth ages). Certain hypotheses have been advanced as to the characteristics of homogeneous and heterogeneous growers and tentative predictions have been made as to the relative success in school of the two types of growers, as well as their relative degree of adjustment.[2] In short, much of the work has tried to get at the relationship, by one means or

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[1] This study was made possible by the cooperation of Mr. Scott W. Street, Principal of the Best Elementary School, Ferndale, Michigan, and Mr. Roy E. Robinson, Superintendent of Schools, Ferndale, Michigan, who loaned the writer growth data to analyze, and who gave permission to publish the results of the analysis. Their kind help is gratefully acknowledged. Thanks are also due to Dean Willard C. Olson, School of Education, University of Michigan, under whom the writer studied child growth and development, and to Mr. Thomas Parsons, Dean Olson's Research Associate, who stimulated the writer to do the study and who gave him many ideas and suggestions.

[2] The work with which the writer is most familiar has been done at the Child Development Laboratories, University of Michigan, and this paper will be based on the approach used there.

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another, between physical and mental growth, on the one hand, and school achievement and "adjustment," on the other hand.

As far as the writer knows, there have been few attempts made to use certain modern statistical ideas and techniques, particularly those of R. A. Fisher, to solve the problem of the analysis of individual development. That is, little effort seems to have been made to arrive at a "statistics of the individual child." Olson's organismic age (OA)—the average of various growth ages at a point in time—is one fruitful way of approaching the problem (7, 8). Other methods, too, have been devised, but the problem of homogeneity or heterogeneity of growth seems not to have been tackled in a clearcut and simple fashion.[3]

PURPOSE

The purpose of the present paper is to outline a method for getting at the "statistics of the individual child" in a manner quite different from previous methods. Specifically, growth data are analyzed to accomplish two main purposes: (1) to determine, in a precise and simple manner, the homogeneity or heterogeneity of a child's growth, and (2) to relate this method to the graphic age-unit method described above. Two methods are discussed: the usual parametric analysis of variance and a non-parametric method. Once this line of thinking and analysis is opened up it will be seen that other related techniques can be profitably used, depending on what kind of data the researcher is handling and what questions he wants to ask the data.

METHOD OF ANALYSIS

Child development researchers customarily measure children's height, weight, dentition, grip strength, wristbone development, reading ability, mental development, and so on (1, 4, 7). The Olsen-Hughes method of handling such measures is to convert them to comparable measures (age-units) in order to make comparisons and graphing possible and also to compute organismic ages (9). The present method of analysis uses Olson-Hughes comparable measures (age-units) and then, by applying simple analysis of variance to these measures, derives an index (the *F*-ratio) of homogeneity-heterogeneity. When the data warrant it, the significance of the difference between organismic ages at different points in time can also be computed by extending the analysis in the manner usually used with correlated measures. In short, the significance of the differences between column (growth ages) and row (organismic ages) means is determined. Certain conclusions as to the child's growth can then be drawn, depending on the significance and relative size of the *F*-ratios.

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[3] Two of the methods pertinent to this paper are those of Hughes and Whaley (11). Hughes worked out a standard deviation of growth which is computed from the deviations of the measures of all growth ages at a single point in time from the mean of these measures (the organismic age). Whaley has criticized this measure for its inaccuracy due to the fact that the SD of fast-growing children tends to be greater than the SD of slow-growing children simply because of differences in slope (rates of growth). Accordingly, he has devised a trigonometric method for "correcting" standard deviations (11, pp. 32-38).

The Ferndale, Michigan, public schools have been measuring children for about four years at approximately six-month intervals. The Olson-Hughes method of conversion and graphing has been used, and a large body of data is available. For the purposes of the present study, seven children's records were selected in one school. The principal was asked to pick children who were homogeneous and heterogeneous and fast and slow growers. The data of each child were then subjected to analysis of variance after conversion by a subtractive method. In addition, two graphs of the data of each child were drawn, one of the original data and one of the "subtractive" data. The graphs were used to validate the analysis of variance techniques, i.e., subjective impressions of homogeneity and heterogeneity were obtained from the graphs and the analysis of variance results checked against these impressions. Several non-parametric methods were also tried with varying degrees of success. It is believed that the method to be described constitutes an adequate statistics of the individual child, and that considerable clarification and understanding of the growth of the child may be derived from the use of the method. In addition, the mechanics of setting up the data and the computations themselves yield other useful information for the researcher. The rationale of the technique and its application are described below.

There are two important assumptions behind the present method of analysis. The first is that the child grows as a whole (7). It follows from this assumption that all the growth measures we get from the child—assuming the validity and reliablity of our measurements—are expressions of a "master plan" of growth. Statistically speaking, we can say that a number of measures of growth taken at a point in time are a sample from the same population, the overall growth of the child. We can further assume, for our analytical purpose, that if we take a number of measures at different points in time these measures are a random sample of the infinite number of measures that could be taken within a period of observation. With these two assumptions we have the basis for our technique. But there is a difficulty here. This is the fact that there will be correlation—and thus, seemingly, lack of randomness—between our various growth measures due to the simple fact of relatively uniform increases over time. However, if we establish a baseline, say the earliest age at which measurements are taken, and subtract from all subsequent measures taken at later points in time the number of months' difference between the later point and the baseline point, theoretically we would then have a more or less random sample of the growth ages of a child at different points in time. Actually, it makes no difference where the baseline is taken; the ultimate statistical results will be the same (i.e., the *F*-ratios will be the same).

It must be clearly realized that the above discussion is theoretical. We know that the various growth ages differ, and we also know that the numerous measures we get are not, strictly speaking, a random sample. The point is that for purposes of analysis we make these assumptions and *then test them*. In other words, we assume that, without the differential effects of the growth ages—HA, WA, RA, etc.[4]—and by using the subtractive procedure, all the growth ages would be the same within the bounds of random error. Specifically, if we start at some baseline, say five years of chronological age (60 months), and reduce all the various growth ages to this baseline by subtracting the necessary number of months from each measured growth age at different points in time, say at 66, 72, 78, 84, etc. months, theoretically we would get the same figure throughout. (This also assumes, of course, that all ages have been converted to comparable ages (age-units) by the Olson-Hughes method.) That is, we should get, for chronological ages of 60, 66, 72, 78, etc., a growth age of 60 at all these points in time. And this is true for all the different growth ages. Of course we will never get the same converted "subtractive" growth age throughout. But we can assume regularity and can say that observed irregularities are random or chance errors. It is as though we were studying a parent population of "subtractive" height ages, say, and selecting a sample of these height ages. If height growth were quite regular, these ages would always be the same. But they are not, of course; a child will grow more in height during one six-month period than he will in another. Yet if we assume a pattern of growth—and this is an assumption that must be made—then the measured height ages should not differ from each other too much; they should form, if we were able to measure an unlimited number of these growth ages, a normal distribution clustered around a mean of, in this case, 60. Similar reasoning applies to all other growth ages.

Now, if we use the Olson-Hughes method of converting all growth ages to comparable age-units, and if we use the simple subtractive method described above, then we should have, theoretically, one large parent population of all growth ages from which our measured values of height, weight, mental ability, etc. are samples. Suppose we measured a child at six-month intervals for four years. We would have eight measures of height, eight measures of weight, eight measures of reading, and so forth. With the usual seven growth ages of the Olson method, we would then have a total of 56 measures. These 56 measures can be conceived of as a sample from one parent population of growth ages. In fact, this assumption is behind the Olson concept of organismic age and growth of the child as a whole (7). The fact that we know perfectly well that no child's growth ages—the various growths measured in different points in time—would be the same does not affect our reasoning seriously. We can say that observed discrepancies are the random or chance fluctuations that are to be expected from any measure.

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[4] HA = Height Age; WA = Weight Age; DA = Dental Age; GA = Grip Age; RA = Reading Age; MA = Mental Age.

In this paper we are mainly interested in the differences between the different growth ages—HA, WA, DA, GA, RA, and MA—of an individual child and the extent to which these are small enough to warrant our calling the child a "homogeneous grower" or large enough to justify calling him a "heterogeneous grower." More specifically, we ask: Is the child a "homogeneous grower" or is he a "heterogeneous grower?" How fast is his growth compared to some "normal" criterion? How slowly is he growing? What can be predicted about his school achievement, his ultimate height, weight, and so on? How about his adjustment? We are here mainly concerned only with the first of these questions. Put in another more precise way, we ask: Do the child's various growth ages differ significantly from each other? On the hypothesis of equality discussed above, they should not; they should be "like" a random sample. (They are not random because we measure the child at certain stated regular times and we have not selected these times, say, from a table of random numbers.) To make what is meant very clear, we should expect that, if the child was a perfect epitome of theoretical expectation, his height age at 60 chronological months would be 60 months; his height age at 96 chronological months would be 60 months (if we use the subtractive method); his dental age at 132 chronological months would be 60 months; his reading age at 84 chronological months would be 60 months. With the usual fluctuations of growth these "criterion" measures of 60 should be something like 58, 61, 62, 59, 64, and so on. And our assumption is that these fluctuations will be small within each growth age and between the various growth ages. Now, if *between* (among) the various growth ages the differences are small, as in the example given above, then we have a "homogeneous grower." But if the differences are large, for example at 72 chronological months we had: HA = 72; WA = 74; GA = 81; DA = 64; etc., and similar differences at other chronological ages, then we have a "heterogeneous grower," or, as Hughes calls it, a "split-grower."

ANALYSIS OF GROWTH DATA

With the preceding theoretical discussion as a background, we can now examine an actual case. In Table 1 are the growth data of R.A., a child in the Ferndale school system who is a fast heterogeneous grower.[5] If the reader will plot these data, using five-month intervals, he will see this rather clearly. Two questions can be asked of the data: (1) Is the child a homo-

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[5] Fictitious initials are used here and elsewhere to preserve the children's anonymity.

TABLE 1

ORIGINAL GROWTH AGES OF R.A.

Chronological Age	*HA*	*WA*	*DA*	*GA*	*RA*	*MA*
94	99	106	92	95	81	84
100	105	115	103	89	85	. . .
105	114	125	103	125	93	107
112	121	140	123	117	98	. . .
117	129	150	136	137	94	140
123	139	156	136	139	102	. . .
127	148	163	136	. . .	114	. . .

geneous or a heterogeneous grower? (2) If she is heterogeneous, how heterogeneous is she? The first step to be taken in answering these questions is to convert the data by the subtractive method described above. Table 2 gives the subtractive data, together with the computations necessary for the variance analysis. The baseline is 94 months. Table 3 shows the simple analysis of variance using the Within Groups (Columns) Variance as the error term. In most cases the analysis would go no further. Table 4 shows the analysis of variance in the case when the researcher

TABLE 2

SUBTRACTIVE GROWTH AGES OF R.A. WITH COMPUTATIONS NECESSARY FOR ANALYSIS OF VARIANCE

CA	*HA*	*WA*	*DA*	*GA*	*RA*	*MA*	Σ	*OA*
94	99	106	92	95	81	84	557	92.83
100	99	109	97	83	79	. . .	467	93.40
105	103	114	92	114	82	96	601	100.17
112	103	122	105	99	80	. . .	509	101.80
117	106	127	113	114	71	117	648	108.00
123	110	127	107	110	73	. . .	527	105.40
127	115	130	103	. . .	81	. . .	429	107.25
ΣX	735	835	709	615	547	207	$\Sigma X_t = 3{,}738$	
$(\Sigma X)^2$ . .	540,225	697,225	502,681	378,225	299,209	88,209	$(\Sigma X_t)^2 = 13{,}972{,}644$	
M	105.00	119.29	101.29	102.50	78.14	99.00	$M_t = 101.03$	
ΣX^2	77,381	100,155	72,189	63,807	42,857	29,961	$\Sigma X_t^2 = 386{,}350$	

TABLE 3

ANALYSIS OF VARIANCE OF GROWTH DATA OF R.A. (SIMPLE)

Source	*df*	*Mean Square*	*F*
Between Groups (Growth Ages	5	1227.16	14.77 (.001)
Within Groups	31	83.07	
Total	36		

wants also to test the significance of the difference between (among) the organismic ages. This is ordinarily not necessary since it seems that very seldom are such differences significant. With R.A., however, we do have a significant difference; the case was deliberately chosen to illustrate the method. Here, of course, we use the Residual Variance as the error term since we are also taking account of the variance due to rows.

R.A. is a heterogeneous grower. The *F*-ratio is 14.77 which is significant, for 5 and 31 degrees of freedom, at the .001 level. If an Olson-type graph is drawn the result is confirmed. It is even more apparent if a graph is drawn using the subtractive data. (In some cases the usual graph is clearer, but often graphs drawn from the subtractive data are more satisfactory.) R.A.'s *F*-ratio ranks third among the seven children. That is, if we have approximately the same degrees of freedom for entering the *F*-table—and the degrees of freedom for these seven cases are more or less alike since with so many degrees of freedom the changes in the *F* entries are relatively small—we can legitimately compare the ratios of different children. Table 5 lists the *F*-ratios of the seven children. Graphs of both kinds were made for all the data and subjective evaluations from the graphs of homogeneity-heterogeneity confirm the *F*-ratios. It can be seen that the first five children are heterogeneous growers—all *F*-ratios are significant at the .001 level. The last two children are homogeneous growers. The .01 level was set for

TABLE 4

ANALYSIS OF VARIANCE OF GROWTH DATA OF R.A.
(FOR CORRELATED MEASURES)

Source	*df*	*Mean Square*	*F*
Between Columns (Growth Ages)	5	1227.16	23.04 (.001)
Between Rows (Organismic Ages)	6	207.23	3.89 (.01)
Residual: C x R	25	53.27	
Total	36		

TABLE 5

F-RATIOS AND *H* VALUES OF CHILD DEVELOPMENT DATA FOR SEVEN FERNDALE SCHOOL CHILDREN

Individual	*F*	*H*
S.T.	18.73 (.001)	23.37 (.001)
D.A.	16.08 (.001)	23.78 (.001)
R.A.	14.77 (.001)	23.22 (.001)
V.B.	10.06 (.001)	24.34 (.001)
S.K.	8.27 (.001)	19.80 (.01)
L.D.	2.16 (n.s.)	15.74 (.01)
B.E.	1.77 (n.s.)	11.23 (.05 — n.s.)

significance. (This is an arbitrary choice, but one which seems to agree well with the data and the graphs.)

The difference among R.A.'s organismic ages is also significant, if not at as high a level—$F = 3.65$ (.01). Note, too, that the ratio itself is not nearly as large as the *F* for Between Columns (Growth Ages). This means, if we inspect the means of the rows (the organismic ages), that R.A. has a definite tendency to be an accelerated grower, i.e., the slope of her growth is steeper than that of other children. Notice how the OA's increase steadily from 92.83 to 107.25 with one mean, 108, not in rank order. Theoretically, they should all cluster around 94.

Table 5 also includes the *H* statistics computed from the data of the seven children. It will be noted that the *H* statistic agrees fairly well with the *F* statistic, except in the last two cases. These results seem to be typical. The writer worked a good deal with other child growth data while trying to perfect the method, and the only statistic which seemed to be consistent with the *F* statistic was *H*. But there are times, of course, when any non-parametric method will not agree with its parametric companion. Generally speaking, *H* seems to be well suited to these data, especially when they are incomplete, i.e., when some one or the other of the growth measures was not taken at one of the points in time. This could be interpreted as a weakness of the method since researchers often do not get all their growth measures of one child at the same time. However, when this is the case, interpolation can be resorted to. The author has tried it with other data and it seems to work satisfactorily. A description of the *H* statistic can be found in Walker and Lev (10). A more complete discussion by its originators, Kruskal and Wallis, can be found in (6). Suffice it to say here that it is a rank-order statistic which yields a measure approximately equal to chi-square. The writer also tried Friedman's χ^2_r (3) and Kendall's *W* (5), but these were unsatisfactory because of missing data in some of the growth ages. It should be noted that, with this type of data, the non-parametric statistics seem not to be "sensitive" to homogeneous growers. Or it might be better to say that they are usually "oversensitive," they usually show significant differences when there are none.

A further refinement of the method should be mentioned. If a set of data yields a significant *F*-ratio, it may in some cases be profitable to inspect the means of the growth ages to discover if any one particular growth is causing the high *F*. Should this be the case, a new analysis of variance can be computed omitting this very discrepant growth. (This can easily and quickly be done by subtraction in the original table, and then by re-computation of the sums of squares, the variances, and the *F*-ratio.) If the new *F* value is not significant, or is greatly reduced, then we may know that the child is a homogeneous grower except for the one discrepant growth. (This seems to happen quite often with Reading Age.) On the other hand, if the new *F* value is still very significant, or does not reduce too much, we can conclude that the child is really a heterogeneous grower. R.A.'s case is also a good illustration of this. She has a much lower reading age than her other ages. Is this low RA causing the significant *F*? The analysis was done without RA, and *F* is 4.10, which is not significant. (It is significant at the .05 level, but the criterion set up was the .01 level.) Thus, if we discount RA, R.A. is a homogeneous child. Actually, because there is correlation between the rows, we could get a more refined error term, and the *F*-ratio would probably be significant. But this is sufficient to illustrate the point. Besides, with these data, it is probably best to err on the conservative side. In other words, this addition to the technique enables the researcher to be quite precise about his estimate of homogeneity and heterogeneity. Similar reasoning would of course apply to the analysis of organismic ages (rows).

CONCLUSION

In general, then, analysis of variance can be used with child growth data to determine the significance of the difference between growth ages and between organismic ages. In most cases, apparently, it is unnecessary to test organismic ages since their differences at different points in time are not often significant, certainly not nearly as significant as the differences between the various growth ages. This finding, if confirmed by further analysis of this kind, should be of value in the field of child development, especially in view of Olson's thinking on the use of organismic age as a predictive measure because of, among other things, its stability (7, pp. 180-181). Significant differences in organismic ages would indicate one or two of three things: (1) a rapidly accelerating grower; (2) a rapidly decelerating grower; (3) an erratic grower. Among the seven Ferndale children we have one or two rapid accelerators.

It is not possible to say now how useful this method of analysis can be. For example, it takes about forty minutes (or less if a number of children's data are analyzed and prepared forms are used) to record and compute the data for one child. Is this too much time when one has many children's data to analyze? The method would not seem to be practicable for schools, especially if a modern computing machine is not available, but for the research worker it would seem to be a valuable tool not only for helping to categorize individual children but also for making comparisons, seeking relationships, and testing hypotheses. Moreover, it gets away from the older almost sole dependence upon individual analysts' unstandardized interpretations. Within certain limitations the method not only clearly distinguishes homogeneity from heterogeneity but also gives the degree of homogeneity and heterogeneity. It is easy and relatively quick to use and supplies a precise, usually unambiguous statistic for interpreting the growth of an individual child. And as an artifact of the method the researcher has a data table which makes the study of a child's total growth as well as his individual growths feasible. Certain measures of relationship, e.g., Kendall's W, can also be used with the subtractive data. Naturally, the method is not perfect. At this writing, for instance, the ages of about six to ten would seem best for this type of analysis. It may be that the method would break down, or have to be considerably altered (although the basic idea would remain the same, of course), perhaps, if data from children who had attained puberty were analyzed. Then, too, there must be homogeneity of variance if the method is to be valid. And, unfortunately, one very discrepant measure, say a very low grip strength measure at age seven, can cause heterogeneity of variance. Of course this can be easily detected and corrected by the researcher. (S.T. was such a case. The removal of the one very discrepant measure, however, rectified the situation. It is also important to note that this measure may have been a mistake of some kind.) Bartlett's test for homogeneity of variance was applied to the seven sets of data and in all cases except the one noted above the variances were homogeneous. The researcher should be wary, however; this may not always be the case. (If it is found that the variances are heterogeneous, it may be possible to use the $\log X$ transformation (2). It should also be noted that finding significant differences in variances might in itself be very useful information for the child researcher, e.g., it might indicate unusual differences in rates, inadequate measurement, or some sort of aberration.

Once the basic idea of the method is grasped there are other applications and methods that might be worked out. For example, analysis of covariance could easily be applied to twin measurements and would yield not only F-ratios of value but also different types of coefficients of correlation (r for Between Groups and r for Within Groups, the latter being a more accurate estimate of the population r). The dualistic-organismic controversy might also be approached with the method (11). Differences in rates of growth can also be tested perhaps by subtracting growth ages from each other at different points in time and then by using the remainders as criterion measures. But before the true usefulness and validity of the method can be adequately determined it should be used with a fairly large representative sample of children, preferably to test specific hypotheses in which homogeneity and heterogeneity and perhaps organismic ages are variables. At any rate, the least that can be said is that it *is* an approach to a statistics of the individual child and it does seem to supply a rather precise index for judging the homogeneity and heterogeneity of child growth and for judging the stability of a child's growth as measured by organismic age.

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A DEVELOPMENTAL STUDY OF SYMBOLIC BEHAVIOR [1]

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The double alternation problem has long been recognized as a measure of symbolic behavior in the animal laboratory and has been used in tracing phylogenetic development (1, 4, 5, 7, 8).

The value of the double alternation technique with human subjects has not been overlooked (2, 3, 6, 9); however, a search of the literature reveals no attempt to include a representative number of normal subjects from which an estimate of maturation of symbolic behavior in normal children might be obtained.

The purpose of this study, therefore, is to trace the ontogenetic development of symbolic behavior in normal children, exerting necessary controls in order to obtain as pure a measure as possible of the effect of chronological age on double alternation behavior.

METHOD AND PROCEDURE

Selection of Subjects

All subjects were selected from a normal public school population.[3] The procedure followed in selecting subjects was to select randomly 40 male pupils from each of the six age groups included, 10 subjects having an IQ between 80 and 90; 10 having IQ's from 90 to 100; 10 having IQ's from 100 to 110; and 10 subjects with IQ's between 110 and 120. All IQ's were obtained by means of the Primary Mental Abilities Test (10).

Table 1 contains the chronological and composite mental age characteristics of the six age groups.

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[1] The author is indebted to Drs. G. R. Pascal and E. O. Milton of the University of Tennessee for the advice and guidance given in completing the dissertation upon which this article is based.

[2] Now at Southern Minnesota Mental Health Center, Albert Lea, Minnesota.

[3] Gratitude is expressed to Mr. Hilary Parker, Superintendent of the Oak Ridge, Tennessee, Public Schools, for his cooperation in obtaining subjects.

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TABLE 1

CHRONOLOGICAL AND MENTAL AGES OF THE SUBJECTS

Age Group	N	Chronological Age Mean	Chronological Age SD	Mental Age Mean	Mental Age SD
6 to 7	40	6.54	.31	6.21	.84
7 to 8	40	7.50	.28	7.59	.93
8 to 9	40	8.41	.34	8.15	.77
9 to 10	40	9.50	.39	9.25	.81
10 to 11	40	10.39	.36	10.41	.63
11 to 12	40	11.41	.24	11.42	.69

In addition to the criteria already mentioned, an attempt was made to limit the possible effect of socio-economic status by selecting subjects from three school districts in which family earning power, educational level of parents, and type of housing were very similar.

PROCEDURE

After selecting the 240 subjects in the manner described, the double alternation problem was presented to each subject individually. This particular version of the double alternation problem was first used by J. McV. Hunt in studying the aftermath of a partial bilateral frontal lobectomy (3).

The Card Test is simply administered, requiring five ordinary playing cards. Four of the cards are black (spades or clubs) while one is red (diamonds or hearts). The red card is designated as the goal card. The cards are shuffled by the examiner and presented face down before the subject. The goal card is placed twice on the left-most end and twice on the right-most end according to the double alternation sequence. The subject is simply instructed to find the red card. A complete trial consists of the LLRR sequence and the test is continued for thirty trials or until the subject is able to obtain two successive correct trials (LLRR, LLRR).[4]

RESULTS

A biserial coefficient of correlation for success vs. failure and mental age yields a coefficient of .59±.05. When success vs. failure and chronological age are correlated, a biserial r of .77±.03 is obtained. These results are in keeping with the findings previously reported by Gellermann (2) and Hunter and Bartlett (6) in which both CA and MA appear related to double alternation behavior.

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[4] In a forthcoming article, Dr. J. McV. Hunt will present a more detailed description of the Card Test. Appreciation is expressed to him for allowing his unpublished manuscript to be read and referred to in this paper.

In order to obtain an estimate of the growth pattern for symbolic behavior as measured by this technique, the average percentages of solution as a function of chronological age were plotted for the 240 subjects. The results are contained in Figure 1. The results show an almost rectilinear progression of success with increased chronological age.

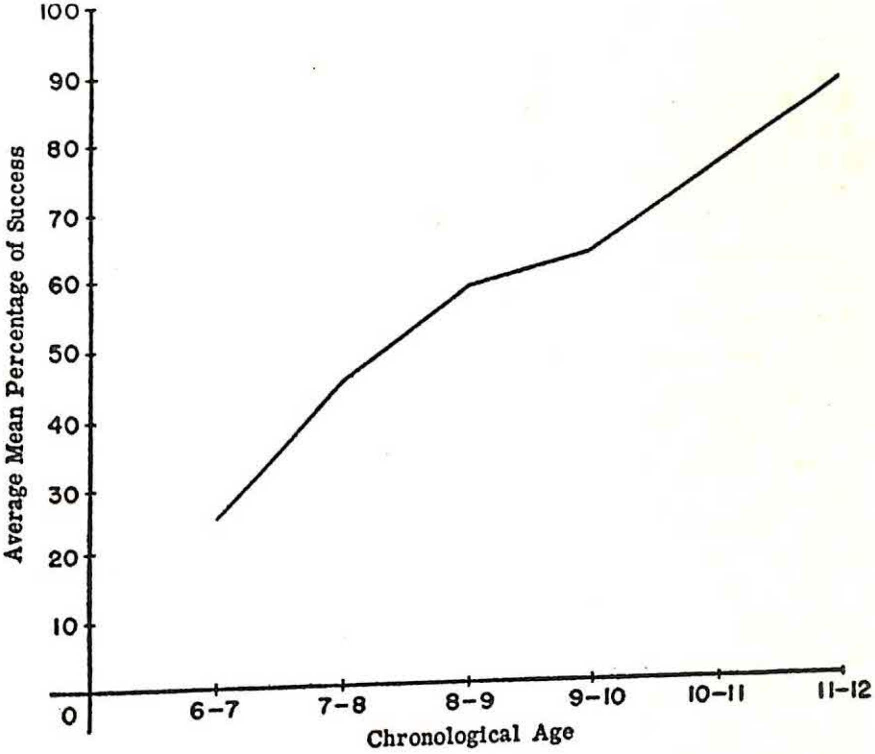

FIGURE 1—Average Mean Percentages of Success on the Double Alternation Problem as a Function of Chronological Age.

This estimated growth curve of the development of symbolic behavior in normal children between the chronological ages of 6 and 12 years has theoretical importance for child development as well as for the psychology of thinking. These results suggest that symbolic behavior follows a growth pattern similar to other patterns of biological growth.

SUMMARY

Two hundred and forty male children between the ages of 6 and 12 years were randomly selected from a normal public school population. A variation of the double alternation problem was administered to each subject individually. Biserial coefficients for success vs. failure and mental age and chronological age were found to be .59±.05 and .77±.03 respectively.

An approximation of a growth curve of symbolic behavior was derived which appears to follow a growth process similar to other biological phenomena.

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AN EXPERIMENTAL TEST OF THE ACCELERATED LONGITUDINAL APPROACH

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Data from the third Harvard Growth Study which show a prepubertal growth spurt have been offered in the past as support for the necessity of longitudinal studies, since it has been maintained that the averaging of individual curves in a cross-sectional study would have concealed the phenomenon (1, pp. 269-270). The data in question have been analyzed by another method to test the hypothesis that a customary longitudinal study was not necessary to establish the existence of the growth spurt.

ACCELERATED LONGITUDINAL METHODS

The method termed "convergence" has been advocated as a means of meeting some research needs not satisfied by either a cross-sectional or longitudinal approach (2). This method consists of making limited remeasurements of cross-sectional groups so that temporally overlapping measurements of older and younger subjects are provided. The remeasurements may be used merely as a way of determining whether trends which would otherwise be seen only between different age groups are corroborated within short time periods for each age group (5). The method may also provide a means of actually linking up individuals or sub-groups between adjacent segments of a developmental curve, each segment consisting of a limited longitudinal study on a different age group.

TESTING THE ACCELERATED APPROACH

To gain some notion of the problems encountered in the latter type of application, physical growth data obtained from the third Harvard Growth Study (4) were treated as though they had been obtained in two temporal segments on different age groups. Growth curves constructed from different segments could then be compared with curves constructed from the measurements of single individuals over the entire time span involved.

From a group of 125 female subjects on whom physical measurements were obtained at times near half-yearly anniversaries, 82 cases were selected who were measured in the main within a month and a half of half-yearly anniversaries. This was necessary to eliminate the possibility of attempting to link apparently overlapping measurements on individuals actually measured at widely different times. The group of 82 was stratified on the basis of types of standing height growth curves, and individuals from each

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stratum assigned at random to one of two groups. The result was two roughly comparable groups for whom equivalent measurements were available, each group consisting of 41 cases. Measurements of standing height at ages 10.5, 11.5, 12.5 and 13.5 were available for each group of girls. This was the critical portion of the total growth curve and was the only portion selected for the present study. Other portions would also be studied in an actual field test.

To test the extent of error introduced by the accelerated approach one group of 41 cases, termed the first segment group, was treated as though it had only been measured at ages 10.5, 11.5, and 12.5. The second segment group was treated as though it had only been measured at 11.5, 12.5, and 13.5. The problem was to match individuals in the first segment group with those in the second group on the basis of standing height measurements at ages 11.5 and 12.5. A composite curve for each "individual" could then be constructed from the 10.5, and 11.5 measurements of one individual and the 12.5, and 13.5 measurements of another. The composite curve could be compared with the actual curve for one of the individuals used in the composite, since in actuality measurements are available from 10.5 through 13.5 for all individuals.

MATCHING PROCEDURE

Each individual in the first segment group was matched with an individual in the second segment group for whom the smallest "D" measure could be obtained by getting the square root of the sum of the squared differences between measurements on standing height at 11.5 and 12.5. This is an application of D technique to correlated measurements (3). Measurements were expressed in centimeters and were not converted into standard scores. The matching procedure can be expected to capitalize on chance similarities between individuals who are in reality different. There may also be some question concerning the method of applying D. In this instance however a check is available on whether the matching is effective and the methods may be judged at least in part by the results.

RESULTS

Figure 1 presents critical portions of curves taken from the original statistical treatment by Shuttleworth (6). Figure 2 is a presentation of the curves obtained by the accelerated method. Both figures are shown in terms of increments in standing height obtained by getting differences between measurements on each half-anniversary of measurement.

Curves plotted with open circle points in Figure 2 represent for three menarcheal groups composite curves constructed from the linked measurements of matched individuals. Menarcheal group is determined on the basis of information which would have been available at age 13.7 on the individual from the second segment group with whom the individual from the first segment group was matched. Curves plotted with solid circles represent increments for actual measurements of single individuals, averaged by menarcheal groups. In the latter case the menarcheal group assignment is again in terms of the menarcheal age of the individual in the second segment group with whom the individual from the first segment group was matched. Curves plotted with solid circles are in effect average increment curves for the second segment group from age 10.5 through 13.5. Thus Figure 2 affords a comparison of actual and reconstructed growth curves.

The pre-pubertal growth spurt is still apparent in the data yielded by the accelerated approach. A statistical test is not provided since the phenomenon of a growth spurt was apparently noted originally on the basis of inspection of the growth curves, and seems available on the same basis in the present data.

Discussion

The results of the present limited test of an accelerated longitudinal approach suggest at least in this instance that one basic phenomenon derived from a full term longitudinal study could have been noted in a more limited study. The present test was limited to reconstructing only one portion of a developmental curve. Only one year's time and one measurement on the experimental population would have been saved by this procedure. The present test is assumed to be primarily informative on the feasibility of linking curves from different individuals and only secondarily representative of what an actual field test of such a procedure would involve. It is apparent that one group might have been selected and measured at age 10.5 and measured again at 12.5 and 13.5. The other group might have been selected and measured at age 12.5 and measured again at 13.5 and 15.5. At the same time that this portion of the curve was being explored two older age groups could be selected so as to reconstruct a segment of the developmental curve at a later point in time. A ten year span could be approximated in three years by this system.

The accelerated approach tested above is suggested as an alternative developmental method. It is obvious that it will introduce considerable error into data collected, and that in some instances it might produce quite misleading results. For example, if in the basic phenomenon under investigation similarities between individuals at one point in time are followed by unpredictable differentiation at a later point, the matching of cases at the earlier point in time would produce quite confusing results. On the other hand, it seems quite difficult to conceive of a developmental process which would not provide at some points the means for prediction of later changes. It would seem in most instances that some difference in level, shape, or dispersion of measurements in a curve would be predictive of later differentiation.

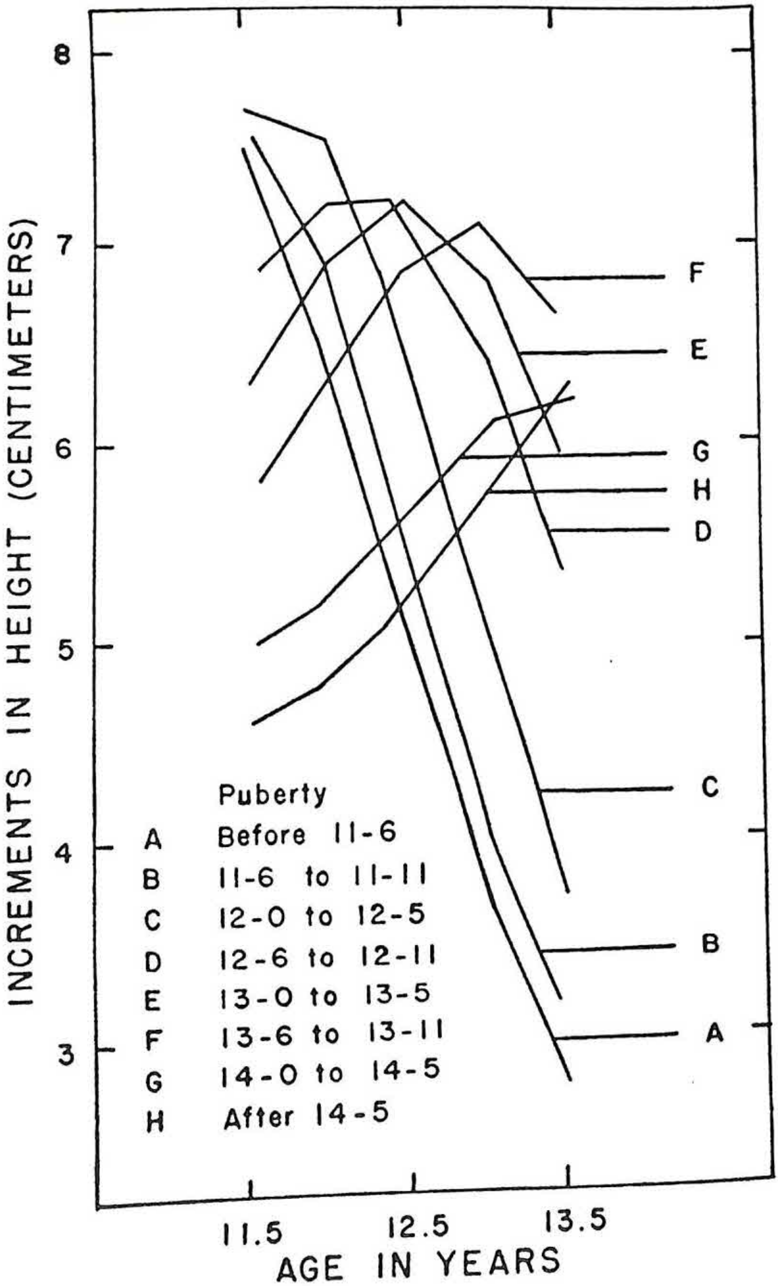

FIGURE 1—Average Annual Increments in Standing Height of Eight Groups of Girls Reaching Puberty at Different Ages. (From Shuttleworth, 6, p. 32)

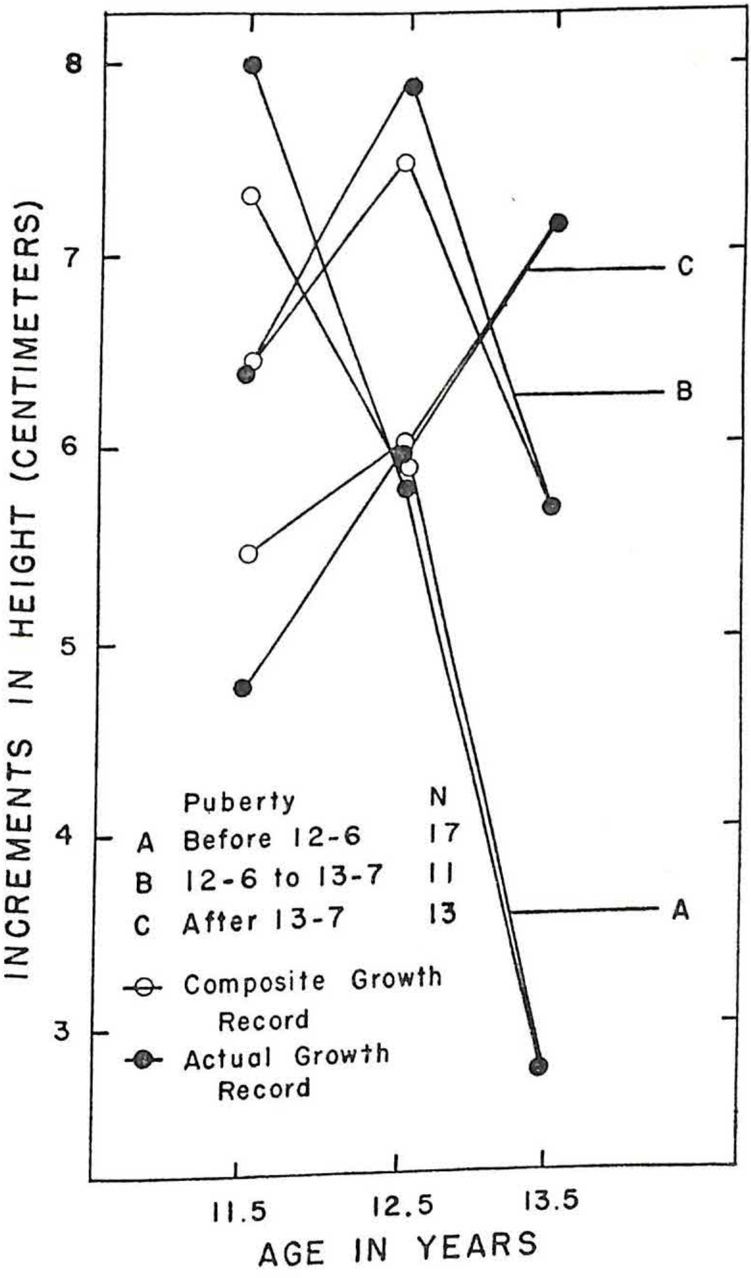

FIGURE 2—Average Annual Increments in Standing Height for Actual and Composite Growth Records.

Another problem is that relatively large samples are required for the purpose of matching cases. A second segment sample should be large enough so that close matches for first segment cases are available. In general measurement error introduced by matching cases or linking sub-populations must be offset by samples typically larger than those usable in customary longitudinal studies.

It is suggested that one use for an accelerated longitudinal approach is in obtaining initial approximations of results in order to make possible a sharper focus in a longitudinal study. Leads may be developed which the more time consuming and difficult longitudinal approach may be specifically designed to illuminate. Without such preliminary leads the longitudinal study may not be efficient in providing data for critical problems. A cross-sectional study may also be used for such purposes but, as has been pointed out (2), it provides no way of approximating individual curves nor of checking sampling between age groups.

Since it should be much more difficult to match individuals successfully on the basis of a single variable, as was done in this study, than in a situation where several measurements are available on each individual, tests of the accelerated approach in a multivariate situation seem warranted. In particular, applications to more global personality data should be attempted. More rapid approximations of longitudinal results may be most needed in this area, since social changes over a long period of time alter the value and implications of studies of culturally anchored personality variables.

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THE EFFECTS OF A MOTOR HANDICAP ON PERSONALITY: II. THE EFFECTS ON INTEGRATIVE ABILITY[1]

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The term "integrative ability" will be used in the present study to include the following components: (*a*) Complexity—i.e., the number and variety of ideas which a child can bring to an unstructured task; and (*b*) Organization—i.e., the ordering of separate elements or ideas into coherent units. Experimentally these components will be operationally defined in terms of the task used in the present study. Clinically they can be regarded as an index to the resourcefulness the child brings to the everyday problems of living. The emphasis here is on conscious choice, planning, reasoning and conceptualization, and the central interest is in how well the child can maintain that combination of intellectual freedom and control which is regarded as a sign of mental well being.

There are two theoretical reasons for predicting that a motor handicap would have an adverse effect on integrative ability. A child with a motor handicap may well be more vulnerable to anxiety, and one of the most pronounced effects of anxiety is a decrease in the ability to deal with new and complex situations in a constructive way. This, in turn, should increase the possibility of unhealthy or deviate solutions to problem situations such as constriction, impulsivity, or fragmentation. Second, a motor handicap limits the range of experience of the child and one can infer that this, in turn, can limit the richness of the ideation which he brings to a task.

The following experiment was designed to test the hypothesis that a motor handicap produces a decrease in integrative ability and corresponding increase in deviate solutions to problems.

METHOD

Subjects

The same subjects were used in this study as in a previous one (2): 12 children with no motor handicap, 12 with a mild motor handicap, and 12 with a severe motor handicap. All were pupils in the Chicago public school

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[1] These studies were sponsored by The Coordinated Program for Handicapped Children and were done at The Institute for Psychosomatic and Psychiatric Research and Training, Michael Reese Hospital, Chicago, Illinois.

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system, between the ages of 8 and 10, of average or above intelligence, with no other severe physical handicap.

Experimental Task

For both theoretical and practical reasons the Bolgar modification of the World Test (1) was selected as being the most suitable instrument for measuring integrative ability. This test consists of 200 small, attractive toys representing houses, trees, animals, people, etc. Because of this wealth of objects the test can be used to tap the ingenuity and flexibility of the child's thinking. In addition, the realistic nature of the material places demands on the child which highlight the kind of logic and the maturity of conceptualization which he can bring to a problem. Thus it seemed admirably suited to reveal the factors of complexity and organization which constitute the definition of integrative ability.

In regard to practical considerations, the test requires the minimum amount of verbal communication and the material, with only slight modifications, can be handled by all but the most severely handicapped. These modifications consisted in mounting the animal figures and fences on cardboard and the human figures on round lead weights to give them stability; presenting the pieces in an upright position in random order instead of in boxes; and the experimenter's offering to place pieces at the child's direction during construction in the case of the severely handicapped individual. In general, it was felt that if the child had an idea about the material he managed to get it expressed the way he wanted it expressed.

The instructions were to "make something" with the pieces, and the emphasis was on doing anything the child wished and taking as long as he wanted. At the end of the task a general question was asked, "What have you made?" In addition the question "What is this?" was asked about specific units of the child's World which he did not identify.

Scoring

For the present study the usual scoring method of counting the number of objects or the number of categories of objects was considered as inadequate for two reasons; first, the emphasis on sheer quantity put the severely handicapped children at a disadvantage because of their difficulty in manipulating large numbers of objects; and, second, such a scoring system seemed to have little direct relation to integrative ability as defined above. Therefore a new scoring system was devised.

As a first step all the Worlds were examined and the distinct kinds of component parts were recorded. Fifteen classes or units of activity emerged: human activities, animal activities, living units, water scenes, fire scenes, train scenes, public buildings, blocks, traffic scenes, farm scenes, zoo scenes, airports, animal pens, parades, and global identifications. Then within each unit of activity, the constructions were rated along the dimension of simplicity to complexity. There were two criteria used in making such ratings, the structural aspect of the construction or what the child actually built, and the conceptual aspect or what the child verbalized about the construction during the enquiry.

The actual assigning of scores within each class followed the theoretical notion that the simplest unit should have the lowest score and that the numerical value should increase as the unit became more complex. Thus the mere placing of an object on the table without elaborating it or differentiating it in any way was given no score; likewise the mere identification of an object ("This is a church") was not scored since there seemed to be no integrative activity involved. The general rule was that the lowest score was given to the unit in which two classes of objects were related (a house with a tree), or the simplest of differentiations was made ("This is the Chief of Police's car"). The score increased as a greater variety of objects were brought into meaningful relation with one another. In all cases higher scores were given only when new categories of objects were related, not when more of the same class were added; e.g., a house with three trees was scored no higher than a house with one tree, but a house, a tree and a fence was scored higher. Thus quantity of objects was relatively unimportant. The highest score always represented the most complex and unified construction in a particular class. For example, in the human activities class a score of 1 was given to such simple descriptions as "A lady selling food," whereas a score of 5 was given to a complex unit made up of at least four classes of related objects, such as "A lady coming to shut the gate after the dogs got the animals back in the pen."

In addition to this detailed analytic scoring system, a global rating of the Worlds was made which could serve as another kind of measure of integrative ability. Such a rating served two purposes. The first was to discover whether there was an overall pattern characteristic of the handicapped child which might be obscured when only the elements were scored. The second was to provide a more sensitive measure of deviate thinking since the analytic scoring proved to be inadequate in this respect.

An examination of the Worlds revealed that they fell into three groups, one of which could be considered as a healthy mode of dealing with the task, and the other two as representing deviations from health. First there were the well integrated Worlds (I), whose total pattern was characterized by a richness of ideation and a synthesis of elements. Then, on the one hand, there were Worlds which became progressively constricted (Cs) with a decreasing number of activities and increasing impoverishment of structure. On the other hand, there were Worlds characterized by an overinclusiveness (O) in which the child could not limit his construction but included extraneous and unrelated objects in a perseverative or jumbled manner. Using such a rating scheme, 9 Worlds were judged Integrated, 16 as Constricted, and 11 as Overinclusive. Using such a scheme, one could not only test the hypothesis that a motor handicap produced a significantly greater number of deviate solutions to the task, but also whether severity of handicap was associated with a particular kind of deviate solution.

However, it might also be argued that the difference between handicapped and non-handicapped children may not be a clear cut one of healthy and deviate solutions, but merely an exaggeration in the handicapped groups of the kinds of deviate solutions found in the non-handicapped children —i.e., the differences in their Worlds may be one of degree instead of one of kind. In order to test this hypothesis also, a second method was devised. The extremes of the Cs and O Worlds, representing strikingly impoverished or chaotic Worlds, were placed in a Non-Integrated group. The remaining constructions, representing a transition from extreme deviation to good integration were placed in a Moderately Integrated group. Using such a scheme there were 10 Worlds in the Non-Integrated category and 17 Worlds in the Moderately Integrated category. The same 9 Integrated Worlds were used here as were used in the first method.

RESULTS

All 36 Worlds were scored according to the analytic system elaborated above, and a mean Integration score was obtained for each group. These means are as follows:

Non-Handicapped	22.91
Moderately Handicapped	14.20
Severely Handicapped	12.41

An analysis of variance yielded an F of 3.48 which is significant at the 5 per cent level of confidence. Individual t tests show that the difference between Non-Handicapped and Moderately Handicapped groups is significant at the 5 per cent level of confidence; the difference between Non-Handicapped and Severely Handicapped groups is significant at the 3 per cent level of confidence; and that the difference between the two handicapped groups is not significant. Thus one can conclude that children with a motor handicap have less integrative ability than non-handicapped children, and there is a tendency for increased severity of handicap to result in a corresponding decrease in integrative ability.

At this point an additional question was raised: Was this decrease due to the fact that the handicapped children merely made smaller but equally rich Worlds in terms of the complexity of the constituent units, or was there an impoverishment within the basic units of activity themselves? In order to obtain a measure of this, the proportion of units receiving high integration scores to the total number of scored units was calculated for each individual. Group means for each group were obtained and are as follows:

Non-Handicapped	.1469
Moderately Handicapped	.1012
Severely Handicapped	.0937

The standard error of the difference between proportions was obtained and used in calculating *z* scores between the groups. A one tail test of significance was used since the hypothesis predicted a decrease in integrative ability with motor handicap. When both handicapped groups were combined and compared with the Non-Handicapped group, a *z* of 1.67 was obtained which is significant at the 5 per cent level of confidence. A *z* score of 1.30 was obtained between the Non-Handicapped and Moderately Handicapped groups which is significant at the 10 per cent level of confidence, and a *z* score of 1.43 was obtained between the Non-Handicapped and Severely Handicapped groups which is significant at the 8 per cent level of confidence. This means that the handicapped children have fewer highly integrated units relative to the total number of units used in their Worlds, and there is a tendency for the proportion of highly integrated units to decrease with the increased severity of handicap. Thus one can conclude that the handicapped children have to rely on simple or moderately complex units in constructing their Worlds to a greater degree than the non-handicapped children.

Next the global ratings of the Worlds were analyzed. Following the first method, the number of children in the Non-Handicapped, Moderately Handicapped and Severely Handicapped groups falling into three categories of Integrated (I), Constricted (Cs) and Overinclusive (O) was tabulated. These results are presented in Table 1.

A chi square of 4.21 was obtained which is significant at about the 30 per cent level of confidence. When the Cs and O Worlds were combined in order to determine whether motor handicap was associated with an increase in any kind of deviate World, the results were even less significant. Thus there is no evidence of a relation between motor handicap and the production of deviate, in contrast to well integrated, Worlds.

TABLE 1

NUMBER OF NON-HANDICAPPED, MODERATELY HANDICAPPED AND SEVERELY HANDICAPPED CHILDREN FALLING INTO INTEGRATED, CONSTRICTED, AND OVERINCLUSIVE CATEGORIES

	Non-Handicapped	*Moderately Handicapped*	*Severely Handicapped*
Integrated	4	3	2
Constricted	4	4	8
Overinclusive	4	5	2

Finally, using the second method of grouping the global ratings of the Worlds, the number of children in the Non-Handicapped, Moderately Handicapped and Severely Handicapped groups falling into three categories of Integrated, Moderately Integrated and Non-Integrated Worlds was tabulated. These results are presented in Table 2.

A chi square of 2.90 was obtained which is significant at around the 25 per cent level of confidence. The results were also insignificant when the two handicapped groups were combined and compared with the Non-Handicapped group. Thus there is no evidence of a relation between motor handicap and the presence of extremely deviate Worlds.

Table 2

NUMBER OF NON-HANDICAPPED, MODERATELY HANDICAPPED AND SEVERELY HANDICAPPED CHILDREN FALLING INTO INTEGRATED, MODERATELY INTEGRATED, AND NON-INTEGRATED CATEGORIES

	Non-Handicapped	*Moderately Handicapped*	*Severely Handicapped*
Integrated	4	3	2
Moderately Integrated	6	4	7
Non-Integrated ...	2	5	3

Discussion

In regard to the hypothesis tested, there is evidence that a motor handicap does lead to a decrease in integrative ability as measured by performance on the World test. Not only is there less ability in the absolute sense, but the proportion of highly integrated units to the total number of units used in constructing the Worlds is lower in handicapped than in non-handicapped children. In addition, there is a consistent tendency for increased severity of handicap to result in a corresponding decrease in integrative ability.

Since integrative ability has been defined in the present study in terms of richness and organization of ideation, one can conclude that the handicapped child can not bring the variety, flexibility and coherence of ideation to life situations that the non-handicapped child brings, and that he can not handle the complexities of life as effectively. Instead he prefers to take on fewer and simpler activities and to have a more limited area in which to function.

However, there are other important considerations. To begin with, the difference between handicapped and non-handicapped children was not as striking as one would expect on the basis of theoretical considerations.

When global ratings of the Worlds were used there were no significant differences between the groups in regard to either type or severity of deviation from good integration. At an empirical level this means one can not look at a World and say it is "typical" of the handicapped child. On a theoretical level it means that one can not conclude that non-handicapped children have good integrative ability and handicapped children have not, since in reality there is a great deal of overlap between the two groups. The soundest interpretation is that, at their best, the non-handicapped children can reach a level of complexity of organization in their dealing with problem situations which is above that of the handicapped children; and, at their worst, the handicapped children have to use meager or ineffectual solutions to a greater extent than do non-handicapped children. It also implies that the compensatory and restitutive mechanisms available to the handicapped child have been either underestimated or neglected. The present evidence indicates that they can maintain a constructive, integrative approach to the same extent as non-handicapped children even when they do not achieve the same level of complexity in their thinking; when they can not maintain this approach, they show the same kinds of disturbances as children with no motor handicap, and the handicap per se does not inevitably force them to become more constricted or impulsive than, say, an emotional disturbance in a non-handicapped child.

There are two possible explanations of these findings. As is known from other projective techniques the sacrifice of exploration and flexibility for the security of simple, easily mastered activities is often a consequence of anxiety. One can speculate that the decrease in integrative ability in the present study is due to the insecurity concomitant with a motor handicap and represents a defensive maneuver to protect the child from anxiety. The other alternative is that the simplification revealed in the study merely reflects the realistic simplification of a child's life resulting from the handicap. It is possible that such a child has to have more things done for him and thus does not have to use initiative as often as the non-handicapped child, and that his relations with parents and peers may be more limited and stereotyped, allowing for less free range of thought and activity. Because this simplified approach is perfectly adequate to the demands of his environment, he does not learn the complexities of adjustment that the non-handicapped child does.

SUMMARY

In order to test the hypothesis that a motor handicap would result in a decrease in integrative ability, the World test was administered to a group of handicapped and non-handicapped children. Both an analytic scoring method and a global rating method were used to evaluate the complexity and organization of the Worlds. The results indicated that there is a sig-

nificant decrease in integrative ability in children with a motor handicap, with a tendency for increased severity of handicap to result in a corresponding decrease in integrative ability. Because of the large overlap between the groups, however, it was concluded that, at their best, non-handicapped children can reach a level of integration superior to that of the handicapped children, and, at their worst, handicapped children are forced to limit their activity more drastically than is necessary for non-handicapped children. There was no evidence that a motor handicap produces a particular kind of deviate thinking in the child, or necessarily forces him to extremes of deviate thinking.

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SOCIO-ECONOMIC BACKGROUND OF CHILDREN WITH IMPAIRED HEARING[1]

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In connection with research on developmental problems of hard of hearing children, Fiedler (1) has reported that children with hearing defects were found to represent a segment of the population very low in socio-economic status. Her generalization that children so handicapped are "underprivileged in every sense of the word" has significant implications for workers in many disciplines with interests in the behavior and welfare of the child and warrants careful consideration of the supporting evidence. The purpose of this paper is to report results from further examination of her hypothesis in terms of the incidence of impaired hearing among school age children from widely differing socio-economic backgrounds.

The data consisted of records from the hearing and vision conservation program in the Chicago public schools covering the final 12 months (May 1950–June 1951) of a demonstration period during which key personnel were provided by private agencies to assist in launching the program. Procedures for case-finding of children with impaired hearing included group and individual pure-tone audiometric tests over six frequencies administered by technicians and examination in an otological screening clinic of cases failing to meet the minimum test standard. Children whose hearing threshold was below the 30 decibel level in two or more of the frequencies in either ear were referred to the screening clinic for diagnostic examination

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with the parent present. Those having a loss greater than 20 decibels but less than the standard for referral were designated "borderline" cases to be watched. The threshold, or zero decibel level, represents the point where hearing is 100 per cent present. For purposes of this study threshold acuity loss was classified as (1) borderline by test, (2) below minimum test standard, and (3) diagnosed as impaired hearing.

SUBJECTS

The subjects included 36,692 pupils in the kindergarten, first, fourth, sixth, and eighth grades of 98 public elementary schools, of whom 1,014 or 2.8 per cent were referred for otological examination in the screening clinic. These were children with a suspected hearing loss, as indicated by individual audiometric tests. Differences between the grades in the number who failed to meet the minimum hearing requirements of the tests were small and well within the range of chance variations.

Incidence of hearing impairment as diagnosed by an otologist was estimated at 2.0 per cent of the pupil-population—2.0 per cent of kindergartners, 2.0 per cent of fourth graders, and 1.9 per cent of eighth graders. As many girls as boys were found to have impaired hearing. Although most of them had a history of earaches or discharging ears, in the large majority of cases their parents had not even suspected they could not hear normally until told of the hearing test results.

Two of every three of these pupils had a conductive type of impairment, which usually involved the middle ear. Both ears were affected about as frequently as one with normal hearing or only a mild degree of loss in the speech-hearing range in the better ear.

Of those referred for examination 99, or about 1 of every 10, had been under treatment for an ear disorder at some time prior to the hearing test at school.

DETERMINATION OF SOCIO-ECONOMIC BACKGROUND

Socio-economic background was estimated from neighborhood conditions as reflected by housing, extent of overcrowding, average monthly rental, median family income, and population character, according to the 1950 census reports for Chicago. Neighborhood was defined as a census tract. No single composite status index was formulated, rather each characteristic was used as a different aspect of the child's environment. Five classifications described variations from the over-all average for the city.

With respect to population, neighborhood classifications ranged from all white with at least 80 per cent native-born, to a high concentration of Negro—80 per cent or more. In 1950, 13.6 per cent of Chicago's population was Negro. Half of the neighborhoods represented in this study had an all white population and about a fifth of them were predominantly Negro.

Housing was categorized in terms of the extent of substandard living conditions in the area. Conditions varied from neighborhoods where there were few or no signs of deterioration of dwellings to blighted areas where at least half of the dwelling units were so deteriorated or so deficient in basic sanitation as to constitute a health hazard.

Some overcrowding was reported in all types of neighborhoods but in relatively few of the exclusively white sections was there more than is commonly found in Chicago. Where the population was mainly non-white, overcrowding was usual and living conditions in general were poor.

No attempt was made to secure a representative cross-section of Chicago's pupil-population. More than half of the children in this study were from the poorer sections of the city.

The design of the study called for determining socio-economic background from the home address but addresses were not readily accessible for pupils other than those who failed to meet minimum hearing or visual test requirements. Since a sample of 1,000 cases from 57 schools in widely differing types of neighborhoods showed close correspondence between conditions around these schools and those of the place of residence, socio-economic status of the pupils was determined by the characteristics of the school neighborhood, i.e., the census tract in which the school was located. For housing conditions this correspondence by the contingency coefficient was .86 for a 5 × 5 fold classification, as compared with the maximum value of .89. In terms of the favored neighborhoods, classifications were the same in 96 per cent and of the underprivileged in 97 per cent of the cases. Correspondence of other socio-economic conditions was of a similar degree.

Fiedler used social agency contacts of the families as one criterion for determining socio-economic status. Inquiry was made in the present study as to registration of families with community health and welfare agencies in the case of those whose children were referred for otological examination and of a sample representing children whose hearing was normal but who were identified by tests to have visual difficulties. This sample included 1,000 cases drawn from different grade levels and from various types of neighborhoods with distributions approximating those for hearing cases. The assumption here is that a history of contacts with social agencies reflects low socio-economic status as well as the existence of pressing personal problems.

Information on registrations with social agencies was obtained through clearance with the Social Service Exchange of the Welfare Council and concerned services provided by different agencies to any member of the family during the previous ten or twelve years, which covered the period since birth in the case of most of the children in the investigation. Agency services were grouped under six descriptive categories: financial assistance, health services, court services, child care and protective services, family services, and other types not included under these categories.

FINDINGS

The general assumption in this investigation is that low socio-economic status with its concomitant health and social problems provides fertile ground for many of the infectious diseases whose after-effects may lead to ear disorders and hearing impairments. The hypothesis here tested is that children with impaired hearing are representative of a segment of the population very low in socio-economic status.

Chi-square tests were used to determine whether or not there was a significant relationship between hearing loss as shown by pure-tone audiometric tests or otological examination, and socio-economic status of the family as revealed by neighborhood living conditions or family history of social services. The 5 per cent level was used as the criterion of statistical significance.

Although there was a high degree of correspondence in the descriptions of a neighborhood by the several measures used to differentiate living conditions, relationships with hearing impairment were examined with respect to each aspect of the environment separately and with the population character of the area controlled, i.e., exclusively white areas or concentrated nonwhite. A further check on observed relationships was made in terms of a general rating where status categories of three of the four measures agreed in characterizing the neighborhood as (1) better than average, (2) average in Chicago, or (3) poorer. Fifty-six per cent of the neighborhoods represented were in one of these three categories and most of the children seen in the otological diagnostic clinic were from these neighborhoods.

The trend of the findings is indicated in Tables 1, 2 and 3, with chi-square values of significance shown in Table 4.

Housing Conditions

A large percentage of the neighborhoods represented are located in sections of the city where the worst housing conditions are concentrated and where overcrowding is most extensive. Reference to Table 1 will show that proportionately fewer cases of impaired hearing were found in neighborhoods where living conditions are substandard than in those where they are reported to be relatively good.

In the findings there is not the slightest suggestion of the greater frequency of impaired hearing, as revealed either by pure-tone audiometric tests or otological examination, among children from underprivileged neighborhoods, as judged by condition of dwelling units. Comparative differences were rarely large but with respect to comparisons concerned with children from exclusively white sections of the city the magnitude of the chi-squares indicates a significant negative relationship. Evidence from this study thus suggests the lower rate of hearing defects where living conditions tend to be unfavorable rather than the reverse.

TABLE I

INCIDENCE OF IMPAIRED HEARING AMONG 36,692 PUBLIC SCHOOL PUPILS ACCORDING TO CHARACTER OF NEIGHBORHOOD—1950

		Incidence of Hearing Difficulties	
Characteristics of the Neighborhoods	*Pupils Tested* (Number)	*Test Findings: Referred for Examination* (Per Cent)	*Diagnosis: Impaired* (Per Cent)
Total	36,692	2.8	2.0
Housing Condition			
Better than Average	7,797	3.1	2.4
Average	8,243	2.9	2.1
Poorer than Average	20,652	2.6	1.8
Monthly Rent			
Above Average	3,569	3.8	2.8
Average	13,762	2.6	1.9
Less than Average	19,361	2.7	1.9
Population Character			
White	14,668	3.3	2.5
Mixed	10,103	2.5	1.9
Non-white	11,921	2.3	1.6
*Neighborhood Rating**			
Total	16,729	3.0	2.2
Above Average	2,736	3.8	3.0
Average	4,852	3.1	2.1
Poor	9,141	2.7	1.9

* Includes neighborhoods where characterizations by each of three or four aspects of living conditions were in agreement.

upper respiratory infections of various types which are said to be more likely to occur where overcrowding and poor sanitation are prevalent, the lack of definite evidence of the association of greater incidence of middle-ear

Analyses regarding the type of impairment showed a direct relation between housing conditions and impairment involving one or both ears. In the poorest neighborhoods a diagnosis of unilateral loss was more frequent and in the best neighborhoods bilateral loss, with differences significant at the 2 per cent level. In percentage terms, conductive impairment tended to be more frequently found where living conditions were substandard but such variations were not statistically significant—20 per cent level of confidence. Since conductive impairment is often the result of repeated disorders with substandard housing conditions adds impressive emphasis to the absence of support for the hypothesis tested.

Monthly Rental and Income Level

Figures on rent refer to the average amount spent monthly for shelter without regard to the number of rooms or whether utilities and furnishings were provided. Income was defined as the net income received by families in 1949. According to the 1950 census reports, the median monthly rental in Chicago was $44.08 and the median family income $3,360.

Neither with respect to low monthly rentals or low income was there evidence of an association with frequency of impaired hearing among the pupil-population included in this study. Both high and low rentals were reported more frequently in sections where the population was exclusively white. Such differences in incidence of hearing impairments as were observed were suggestive of greater incidence where rentals were above average.

The trend of the findings as to income level likewise indicated greater frequency of impaired hearing among children from families in the higher income brackets with a progressively decreasing proportion in the lower income groups. In neighborhoods where the median income was in excess of $4,500, the percentage with hearing below minimum requirements of the test was 3.6; where the median was less than $2,000 this percentage was 2.1.

Relationships with low economic status were further examined in terms of public assistance rates in the different community areas in Chicago. The city is divided into 75 community areas comprising 935 census tracts, here designated neighborhoods. Assistance rates were available by specific age groups and place of residence for persons receiving cash grants. The 18 areas with the highest rates in 1952 for the population under 18 years of age contained 26 per cent of this age group, but 86 per cent of the public assistance recipients of this age group (2). One of every four children included in the present study was living in a high assistance rate area. Incidence of hearing impairment was found to be lower in such areas than where few or no families with children under 18 years of age were receiving public assistance—2.1 per cent where the public assistance rate was high as compared with 3.7 per cent where this rate was low.

Population Character of Neighborhood

The population character of the different neighborhoods was described as an all white area, mixed population area, or concentrated non-white area. White and mixed classifications were divided into subgroups to show nativity in the white areas and the proportion of non-white in the mixed areas, i.e., less than average in Chicago or average but not predominantly non-white.

Analyses of the screening results reveal a direct association between incidence of impaired hearing and the population character of the neighborhood, with the highest frequency of impairment found among native-born white and the lowest among children from concentrated non-white areas. The fact that most of the white children were from sections of the city where living conditions are relatively good and the large majority of the non-white were from underprivileged sections make these findings peculiarly pertinent to the problem investigated.

TABLE 2

COMPARISONS OF FREQUENCIES OF CERTAIN TYPES OF HEARING IMPAIRMENTS AMONG SCHOOL CHILDREN FROM DIFFERENT NEIGHBORHOOD CONDITIONS

		PERCENTAGE HAVING SPECIFIED DIAGNOSIS					
				Conductive Impairment		*Perceptive Impairment*	
Characteristics of the Neighborhoods	*Pupils with Impaired Hearing*	*Loss in One Ear*	*Loss in Both Ears*	*Total*	*Middle Ear Involved*	*Inner Ear Involved*	*High Tone Loss*
Total	740	52.7	47.3	66.3	52.7	18.8	14.9
Housing Condition							
Better than Average . .	190	46.0	54.0	58.1	48.4	15.0	26.9
Average	169	52.1	47.9	61.6	47.6	20.7	17.7
Poorer than Average . .	381	56.2	43.8	72.6	57.2	19.8	7.6
Monthly Rent							
Above Average	98	51.5	48.5	71.3	59.6	9.6	19.1
Average	267	50.4	49.6	60.1	46.9	20.9	19.0
Less than Average . . .	375	54.6	45.4	69.5	55.0	19.6	10.9
Population Character							
White	362	48.2	51.8	59.6	49.1	18.5	21.9
Mixed	188	54.9	45.1	76.2	59.7	13.8	10.0
Non-white	190	58.9	41.1	69.3	52.7	24.2	6.5
*Neighborhood Rating**							
Total	362	51.9	48.1	65.4	50.4	18.4	16.2
Above Average	83	48.8	51.2	60.5	48.2	11.1	28.4
Average	103	45.6	54.4	61.4	49.5	16.8	21.8
Poor	176	57.1	42.9	70.2	52.1	22.8	7.0

* Includes neighborhoods where characterizations by each of three or four aspects of living conditions were in agreement.

The trend of the findings was consistent regardless of whether they concerned borderline caces (by tests), those failing to meet the minimum hearing requirement with referral for otological examination, or those with a diagnosis of impaired hearing. Statistically the evidence is significant in showing more cases of impaired hearing among white children than would be theoretically expected and fewer among the non-white. Inspection of the mid-section of Table 1 will indicate the marked consistency of the differences between classifications as to population character of the neighborhood. While the categories may not correctly describe an individual child's race, the population of neighborhoods designated as non-white areas was almost exclusively non-white with 80 per cent to 99 per cent Negro, and that of the white areas represented was entirely white.

Differences were also indicated regarding types of hearing impairment and history of ear trouble. In the white areas bilateral loss was more frequent and in the non-white areas unilateral loss. Findings in percentage terms based on records in which such diagnoses were noted are shown in the mid-section of Table 2. Here again the differences were statistically significant. Histories of earaches and discharging ears likewise were reported more frequently for white children than for those from non-white areas. Since facts concerning history of ear disorders were elicited by direct questioning at the time of the clinic visit the information is probably as accurate as any other type of health history so obtained, and no less in the case of the non-white than the white mother. It is noteworthy in this connection that about as many of the non-white as white who were seen in the otological screening clinic had been under medical care for an ear disorder at some time prior to their examination at school—13.0 per cent of the white, and 12.4 per cent of the non-white for whom such information was available.

If it can be assumed that in the Chicago area the population character of a neighborhood tends to reflect the socio-economic status of its residents, with exclusively white neighborhoods where most of the families are so-called Old Americans representing the highest status category and concentrated non-white neighborhoods the lowest, then these findings clearly fail to support the generalization that the majority of children whose hearing is impaired are from families of very low socio-economic status.

General Character of Neighborhood

In terms of a composite descriptive rating based on the extent of dilapidation, overcrowding, amount of monthly rental, and/or family income level when the population character was controlled, the analyses again yielded no indication of an association between substandard neighborhood conditions and impaired hearing among school children living under such conditions. Since there was a high degree of correspondence between the different measures of socio-economic status, the trend of these results was to be expected from findings previously cited. The results clearly warrant the conclusion that among elementary school pupils from widely differing living conditions in a metropolitan community hearing impairment, as determined by pure-tone audiometric tests and confirmed by otological examination, was observed with no greater frequency among children from underprivileged than from favored neighborhoods.

Social Agency Contacts

Family background information was obtained on 1,865 individual children regarding history of registration of some member of their immediate families with community social agencies and the number and type of agencies with whom they have had contact. Included among these cases were 605 children who had a diagnosis of impaired hearing, 105 who had been referred to the otological screening clinic but upon examination were found to have "no loss" of hearing, and 1,155 with visual difficulties whose hearing was normal. More than half of the vision cases were living in sections of the city classified as average or better. A history of social agency services was reported for two of every five of the families for whom information was secured—36 per cent of the impaired hearing cases, 36 per cent of the "no loss," and 42 per cent of the visual defect cases. These records reveal such histories were no more frequent among children with hearing defects than among those with normal hearing.

In the majority of cases the contact had been with only one agency although 6 per cent of the families had been registered with at least four different agencies for some type of service during the years 1940-52 inclusive. The three types of services reported most frequently were for financial aid, health services, and court services. Histories of financial assistance were observed as often in the case of children with normal hearing as of those with impaired and were most frequent among the non-white. Among the impaired hearing cases from non-white neighborhoods 31 per cent had a history of financial assistance from welfare agencies; among the normal hearing with visual difficulties 54 per cent. These were the only comparisons with respect to social agency contacts where differences were statistically significant.

Table 3 shows the types of social agency contacts reported for families of children whose hearing was below test requirements compared with those with normal hearing who failed to meet the vision test standards. Findings are shown in percentage terms for the total cases cleared and for those living in exclusively white neighborhoods and in neighborhoods predominantly non-white. While all of these children had been identified as having either hearing or visual difficulties, the lower status of those with hearing loss is not indicated in these findings.

TABLE 3

COMPARISONS OF SOCIAL AGENCY CONTACTS OF 1,865 FAMILIES OF IMPAIRED HEARING OR VISION CASES

	HEARING OR VISION BELOW TEST REQUIREMENTS					
	Total Sample*		White Neighborhoods		Non-White Neighborhoods	
History of Agency Services	*Hearing Cases*	*Vision Cases*	*Hearing Cases*	*Vision Cases*	*Hearing Cases*	*Vision Cases*
Number in Sample	710	1,155	375	599	163	279
No Agency Contacts	451	673	273	465	83	76
Agency History	259	482	102	134	80	203
Percentage with History†	36.5	41.7	27.2	22.4	49.1	72.8
Financial Services	16.3	24.4	7.7	6.8	31.3	54.1
Health Services	15.5	11.8	12.5	9.8	14.1	14.7
Court Services	14.5	11.7	10.7	8.5	19.6	14.3
Child Care Services	9.2	5.8	8.3	4.0	7.4	7.9
Family Services	8.6	5.2	6.7	5.5	12.3	4.7
Other	3.5	2.9	3.7	2.2	3.7	2.9

* Includes 172 Hearing cases and 277 Vision cases from mixed population neighborhoods.

† Percentages based on size of total sample.

DISCUSSION

Socio-economic background of children with impaired hearing was examined in terms of certain characteristics of their physical environments and the need of their individual families for special community services as revealed by registration with social agencies. While the place of residence may not afford an adequate index to a family's status, neighborhood conditions indicate the "climate" in which these children were growing up and substandard living conditions assuredly tend to militate against healthy development. The length of time the families had been living under environmental conditions of the character of their 1950 addresses was not ascertained but from available information it would appear that the population of the poorest neighborhoods in Chicago tends to be about as stable as that of favored sections. According to census reports, in the exclusively white areas represented in this study 87 per cent of the families in neighborhoods here characterized as underprivileged had not changed their place of residence during 1949 and 1950 as compared with 88 per cent in the best sections.

It is a logical assumption that if the effects of substandard living conditions directly or indirectly bear a close relation to impaired hearing in childhood, they should be reflected in comparative results of incidence in widely differing neighborhoods. The findings in this study show neither in consistent trend nor in statistically significant differences evidence which would suggest higher incidence of impaired hearing where living conditions were poor. Even where dwelling units were so deteriorated or so deficient in basic sanitation as to constitute a health hazard and the entire neighborhood was characterized as blighted, the frequency of hearing impairment among these children of school age was no greater, if as great, as among children living in the best residential sections. Children with impaired hearing were discovered in all types of neighborhoods and, in metropolitan Chicago, cannot be said to represent any special segment of the population.

Home visits to 50 cases so selected as to give a cross-section of the different socio-economic categories confirmed the classification of living conditions in three of every four of the cases visited. Generally such variations as occurred were in areas where signs of deterioration were less extensive, and where in the main poorer conditions were the result of subdivisions of large apartments into small dwelling units with the consequent overcrowding. Individual home conditions were considered as better than those characterizing the neighborhood in eight of these cases and poorer in six.

Detailed examination of evidence regarding low socio-economic status of families of children with impaired hearing as revealed by their contacts with social agencies likewise yielded no indication of unique family background in this respect. While comparable data from the community as a whole were not available, in the light of findings from a group with normal hearing who were identified as in need of eye care, the majority of whom were from average or better types of neighborhoods, it seems reasonable to assume that the extent of agency contacts of the impaired hearing cases differed little from what might be expected in this metropolitan community during the 10 year period covered. Apparently whatever situations these histories of contacts with health and welfare agencies may reflect their impact had been felt by the normally hearing child as well as by the child with impaired hearing.

The level of confidence of the relation of various social and economic aspects of family background to incidence of hearing impairment among approximately 37,000 Chicago school children as determined by pure-tone audiometric tests or otological examination is shown in Table 4. In each correlation the direction of the results pointed to the higher status of the impaired hearing cases and the greater likelihood of loss in both ears.

All hearing tests were administered by a staff of technicians who were sent from a central office to the individual schools. During the period covered by this study the selection of schools where tests were to be given was determined by requests from the principals. Machines were calibrated

TABLE 4

SIGNIFICANCE OF VARIATIONS IN INCIDENCE OF IMPAIRED HEARING WITH MEASURES OF SOCIO-ECONOMIC STATUS

Hearing Loss	*Aspects of Socio-Economic Status*	*Chi-Square Value*	*Degree of Freedom*	*p*
Acuity below test standard	White—Non-white neighborhoods	24.14	1	.01
Diagnosis of loss	White—Non-white neighborhoods	4.74	1	.03
Bilateral—Unilateral	White—Non-white neighborhoods	5.76	1	.02
Acuity below test standard	Housing	6.97	3	.10
Acuity below test standard	Housing (White neighborhoods)	8.74	3	.05
Diagnosis of loss	Housing	9.75	3	.05
Bilateral—Unilateral	Housing (White neighborhoods)	10.66	3	.02
Hearing—Vision defect	Financial—Other agency services	17.28	2	.01
Hearing—Vision defect	Financial—Other agency services (Non-white cases)	26.77	2	.01

and headphones checked before each day's testing was begun and the equipment spotchecked during the day. Special effort was made to keep the testing and otological examination procedures comparable throughout all schools. It is therefore most unlikely that the comparative findings between good and poor neighborhoods were unduly influenced by variations in standardization of procedure, interest of teachers, or cooperation of the pupils.

Only a relatively small proportion of the families of these impaired hearing cases had even suspected the child was having difficulty hearing until so advised by the school, although the loss was bilateral about as often as unilateral and in some cases was severe. Hearing is an important part of the dynamics of behavior and prevention of impairment consists not only of the reversal or alleviation of clinical symptoms of the ear, but also of the mitigation of collateral symptoms related to behavior and development. While the impaired hearing cases in this study were no less likely to be from favored as from underprivileged neighborhoods, what was done about their impairment varied directly with the character of their living conditions but appeared to be unrelated to previous knowledge of the hearing difficulty. Fewer children from the underprivileged neighborhoods were given an opportunity for needed medical care than those from the better sections of the community. Children from non-white sections were as likely to be taken for the advised care as those from exclusively white sections when their living conditions were similar.

The results on follow-up care are in agreement with those reported in the literature on medical care and remedial services in showing a direct relation between care obtained and socio-economic status. The surprising finding in this study is that so large a number of children with impaired hearing from so-called middle class families who were living in the better residential sections where incomes were considerably above average failed to receive the recommended medical care. According to the available records less than half of the children from the higher status levels were taken for care, and not all of these were seen by an otologist as their condition required. These findings offer convincing evidence of the extensive need among families of all economic classes for intelligent understanding of the importance of hearing in the social adjustments of everyday living and of what impaired hearing means.

Reactions of parents to a diagnosis of impaired hearing will vary with individuals but will undoubtedly influence what is done about the child's problem. From interviews with parents who had failed to follow through on the care advised by the examining otologist it was apparent that numbers of them considered impaired hearing as something to be tolerated with little acceptance of the possibility of remedial or rehabilitative steps to offset the communicative disorder; others refused to accept the diagnosis and expressed no concern for further evaluation of the condition.

Research at both basic and applied levels on aspects of behavior and development of children with any degree of hearing loss needs to be carried on as well as in areas of prevention and remedial measures. With the great advances in medical treatment, the rapidly developing field of audiology and in modern concepts of the dynamics of individual development, the horizon of what can and should be done for children with impaired hearing has been tremendously widened. The major problems center around early detection of the child with ear disease, accurate medical diagnosis of his impairment with treatment as soon as possible, and adequate provisions for special guidance and services to help him realize his potentialities. Implications of the Chicago findings suggest it is with respect to these problems that relationships with socio-economic status can be identified, but that such relationships appear to be of less importance than parental attitudes toward hearing impairment and the family's value systems.

SUMMARY

The hypothesis that children with impaired hearing are representative of a segment of the population very low in socio-economic status has been examined from the point of view of incidence of hearing loss among children from sharply contrasting socio-economic backgrounds. The results fail to establish the hypothesis, whether socio-economic status was determined by characteristics of the neighborhood environment or aspects of living conditions of individual families and their need for community services as revealed by contacts with social agencies. Where differences were

observed they suggested a lower incidence of hearing defects among children from underprivileged neighborhoods than from the favored.

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